Department of Impresa e Management

Master Degree in Corporate Finance

Chair of Financial Statement Analysis

COMPANY VALUATION IN THE SMART METERING INDUSTRY.

THE LANDIS+GYR CASE

Relatore:

Prof. SAVERIO BOZZOLAN

Candidato

ALBERTO FACCHINI

No. 701461

Correlatore:

Prof. EUGENIO PINTO

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ABSTRACT

This paper is intended to present a concrete approach to the financial evaluation of a company. The main purpose behind this work is to bridge the academical backgroud behind financial statement analysis and corporate finance tools and the valuation methods learnt during the Master of Science classes, with the practical approach that is performed by market analysts in the financial industry worldwide every day. This thesis dissertation paper aims at highlighting how the company valuation fundamentals should be integrated with ad hoc approaches and assumptions that space to the market research, trends study and industry forecasts. This paper is not a representation of how a financial model and investment thesis is generally done within the professional industry, but it aims at representing a proxy of how to approach this task in a more specific way with respect to the one proposed by academical studies.

The reason behind this choice dates back to the CFA Global Research Challenge I had the chance to participate in during the Exchange Program in Lausanne (Switzerland), which gave me the first practical approach to the industry. This challenge represented an incredible experience that put me in front of a professional jury, getting to know more about the job that market analysts performs daily, by getting in touch with a real listed company's management through personal meetings and analyst calls, Q&A sessions and related seminars. A second reason belongs to the job I currently do in Milan, which is probably the most demanding within the entire financial industry, the job I always aspired to. Investment banking within Mergers & Acquisitions division in an international bank can get you inside all the dynamics that shape industries and sectors worldwide, and have direct and concrete consequence on the countries and global economy. Being part of this complex network of transactions is something that get you fully understand how everything moves around ourselves and how innovation and market changes find room to happen.

The work behind this paper can be considered as a guide for performing a standard company valuation, keeping in mind that every single case should be considered separately with its own assumptions. This paper represents a specific case of valuation of a company that operates within a regulated, innovative and technological industry and should be considered as a shell from which performing a similar task.

The process behind the analysis of the company was intended to cover the key approaches learnt during univeristy classes and real practice. Indeed, before analysing a company, it is vital to spend time on understanding the industry, the sector and the market dynamics that surround the company.

Following the investment analysis, I issue a BUY recommendation on Landis+Gyr with a target price of CHF78.5 with an upside potential of 27% with repsect to the closing price at the valuation date (November 30th, 2018). Valuation is based on a 90-10 hybrid Discounted Free Cash Flow model and Trading Multiples approach. Valuation is sustained by end-market growth in key regional segments, a consolidated market presence in the advanced economies and a growing penetration into emerging ones.

CHAPTER I: THE SMART METERING INDUSTRY

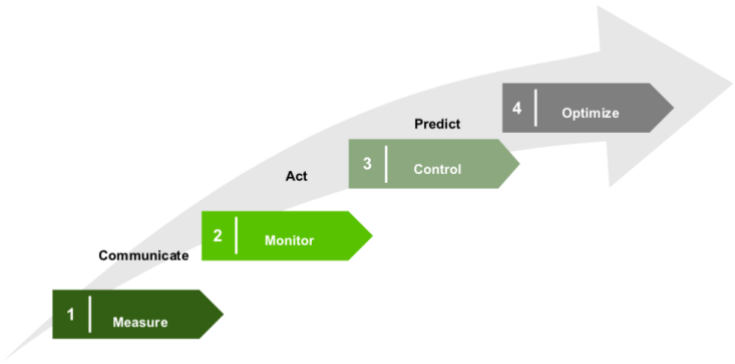
Ia. Landis+Gyr overview

Landis+Gyr Group AG ("Landis+Gyr", "L+G" or the "Group") is a Swiss firm that operates in the smart-metering and grid-networking industry. Headquartered in Zug, the Group develops and sells meters and related software to over 3,500 electricity, gas, water utilities and end-consumers worldwide. Born in 1905, it went public in July 2017 after being owned by various firms such as K.K.R. ("Kohlberg Kravis Roberts"), Siemens and Toshiba. In the recent years, Landis+Gyr is undergoing a business transition by outsourcing the overall meter production for the benefit of a light capital structure. Landis+Gyr management include Richard Mora (CEO), Jonathan Elmer (CFO), Prasanna Venkatesan (Head of Americas) and Susanne Seitz (Head of EMEA). As of the Group's website, the Board of Directors includes 8 members, with Andreas Umbach as the Chairman of the Board. According to Bloomberg, as of June 4th, 2019 the Group's main shareholders are Kirkbi Invest A/S (15%), Rudolf Maag (private investor, 10%), Franklin Resources Inc (6%), Morgan Stanley (5%), Nordea Bank (3%), Credit Suisse Group (3%), followed by Norges Bank, Blackrock and UBS (2.8%, 2.67% and 2.3% respectively). L+G provides metering solutions. Its product offering includes electricity meters (industrial, commercial, residential, grid meters), accessories, communication network and personal energy management products, grid management solutions, distribution automation, outage management, prepayment, remote service connection (*source: Factset*). Landis+Gyr currenlty employs 5,611 people worldwide, of which 1,340 in R&D activities (~24%). In 2018, the Group acquired the Australian smart metering company Acumen in a Joint Venture with Pacific Equity Partners Ltd, an Australian based private equity firm.

Ib. Industry and market overview

A *smart meter* is a device that allows energy consumers to monitor ("meter") and actively control ("smart") their energy usage over time. The smart metering sector is highly dependent on the utilities industry. The ongoing transformation of the utility industry follows four stages based on the degree of technological advancement and functional capabilities of the grid infrastructure, as illustrated below (Fig. 0).

Fig. 0. Evolution of metering capabilities across technology development



Source: Landis+Gyr IPO Prospectus, 2017

Historically, the metering infrastructure in utility networks was mainly focused on facilitating the measurement of electricity, gas, water and heat consumption for billing purposes (i.e. "measure"). The metering solution has developed from simple meters requiring manual readings, to one-way communication, AMR, meters capable of transmitting information (meter readings) to the utility. These can be regarded as the initial form of smart meters and have since then evolved to two-way communication meters, forming part of AMI solutions. AMI enables real-time interaction between the utility, grid connected devices and metering end points.

The second stage of the utility grid development is characterized by the ability of network elements to interact with each other through the increasing integration of communication technologies (i.e. "monitor"). While this will eventually be the technological evolution of water and gas distribution networks as well, for the time being, the pace of adoption is being set in electrical utilities. The main reason for this is that electricity is not an easily or cheaply stored commodity. As a result, supply and demand must be kept in a constant balance, which is one of the key features of the electricity grid. It is the intermittency of supply from renewables that is disrupting the ability to maintain this balance. As a result, technical solutions to smartly monitor and manage the electricity grid have evolved, known as "Smart Grids". Smart Grids enable comprehensive network monitoring, data analytics and management systems to further increase efficiency and reliability of energy supply.

For gas and water metering, safety and security supply aspects, such as leakage detection and gas cathodic protection capabilities, become increasingly important in the network automation context. However, the majority of current gas and water distribution network systems across the globe are either still in the "measure" phase or in transition towards the "monitor" phase.

The next step in the development of the grid and distribution network infrastructure will enable near real-time supply-demand balancing and active control from the generation to the end-consumer level by the utilities (i.e. “control”). With the proliferation of intermittent and fluctuating renewable energy generation sources such as solar and wind, and at the same time, changing demand patterns due to new consumer needs and behaviors (e.g., electric vehicles and home energy storage), traditional command and control methods for grid management need to be modernized. Balancing supply and demand for a stable grid in these new conditions requires demand response programs, consumer engagement and other forms of distribution automation.

The technologically advanced grid of the future facilitates real-time optimization and active grid management, not only under the centralized control of the utility, but also through actions which are decentralized, autonomous and enabled by distributed intelligence across the grid (i.e. “optimization”). This so-called “Interactive Grid” will leverage the increased processing power available at end-points and network elements, and will benefit from peer-to-peer communication in local neighborhoods to continuously optimize and balance supply and demand across the grid at both micro-local and macro-network scales. Load forecasting, predictive maintenance, behavioral consumer engagement and transactive energy will all play key roles in defining and enabling this new Interactive Grid.

Although the transformation of power grid infrastructure from traditional towards Smart Grid is being actively enabled by governmental policy and regulatory change, there are substantial regional and national differences regarding the transition progress.

The smart metering market can be distinguished into three main regions: EMEA (Europe, Middle East and Africa), Americas (Canada, USA and South America, included Japan) and APAC (Asia-Pacific, excluded China). Landis+Gyr revenues account for the 56% in the Americas, while they register the 36% in EMEA and just the 8% in APAC (fiscal year 2018 figures).

North America is among the most developed AMI markets, where first generation smart metering systems, capable of conducting the “measure” and “monitor” functions, are broadly rolled out and are partially already being replaced with AMI applications, which are also able to exercise the “control” function over the power grid. On the other hand, the national grids of most countries in Central and Latin America are still largely at a pre-AMI stage, with first smart metering infrastructure programs yet to be implemented.

Substantial differences in AMI adoption also exist in Europe, where several Smart Grid pioneers like Italy, Sweden and Finland will reach 100% penetration rate by 2021, followed by late adopters such as Germany or Switzerland, where the first generation of smart metering applications is yet to be rolled out. In APAC, large markets like China and Japan have first generation Smart Grids rolled out, with AMI replacement and second-generation upgrade programs planned. At the same time, government programs exist in numerous other countries in the region that are dedicated to implementation of the initial Smart Grid infrastructure in the coming years.

The AMI adoption in certain countries follows a CBA analysis (*Cost-Benefit Analysis*) in order to evaluate the potential benefits of a similar technology in the country with the cost of doing so. Germany is a key example in the EMEA region where a negative CBA analysis has impacted the adoption of new technologies in the smart metering sector so far.

Ic. Players

1. Suppliers

In the smart metering sector, the production is typically outsourced, and manufacturers are usually not the same entity as the distributors. As it will be shown for Landis+Gyr, smart meter firms typically provide their customers with smart metering solutions and ex-post services such as maintenance, data management and post-selling services. Smart meter providers give mandate of building for them the devices to manufacturers typically involved in the semiconductor and electronical equipment industry. Hence, the full production process is outsourced. The providers' supply chain coverage include the design of the product on the specifics given by country regulators and the distribution and customer service, which provide customers with the selling and post-selling services and assistance (data management and analysis, . For this reason, partnerships with suppliers and manufacturers are vital for the success of the business, involving high risk. The major risks involved in the outsourcing processes are concerned with defective products and supply delays or impossibilities, ending up in a potential loss of reputation for the smart meter provider. Another risk comes from the concentrated supplier base. As an example, Landis+Gyr depends on a few, large key suppliers that deliver mission-critical components: the top five suppliers account for the 59% of material expenses (2017 figures), while the largest, Foxconn, accounted 32% just by itself. As a result, the supplier bargaining power is high and troubles with just one of the key suppliers may severely impact the business.

To prevent these risks to happen, smart meter providers adopt various initiatives. Landis+Gyr, for example, has developed different risk-bearing measures on the supply side of its business in the recent years. These initiatives are aimed to reduce defects and to assure continuity of supply. One of these, the *E-Sourcing Platform*, is a digital marketplace created by the Swiss firm where demand and supply of components are offered and sold, assuring a transparent, quick and efficient process. The platform has the benefit of increasing cost reductions over the years (4-5% cost savings in 2017, according to Landis+Gyr). Among the other measures, worth to be mentioned are the *Zero Defects Initiative* (product failure analysis during the manufacturing process) and the *Global Safety Stock Program*, an on-site inventory of strategic components aimed at ensuring supply continuity, preventing the firm from unexpected supply shortages or delays.

2. Regulators

The utilities sector is regulation-based, and, for extension, the smart metering industry face the same destiny. Utilities are subject to regulatory pressures from their respective governments and energy authorities. This situation leads to substantial differences among the different regions for what concerns the adoption of a particular technology. Differences are related to the willingness of the authorities to adopt a certain technology and to the technical specifics of the devices that have to be provided in the country (Fig. 1), constituting very different sales' figures and a complicated analysis on their future projections. Taking the EMEA region and the Americas region, while in the former the European Union dictates a set of principal specifics for the devices (*European Standardization Organization* or ESO) to then leaving the design and the minor specifics to each country under the EU (e.g. *Linky* by Landis+Gyr, in France), in the latter for the USA the full decision is in the hands of the energy authority (*Federal Energy Regulatory Commission* or FERC) that defines specifics and design of the meters (*American National Standard Institute* or ANSI). Single countries have different specs according to their respective energy authority or government. A substantial difference between USA and EU is concerned with the technology adoption. While in the United States the FERC with the government dictates the adoption process for all the states, in the European Union the adoption is implemented by each member state as a consequence of a cost-benefit analysis (emblematic the case of Germany). The unpredictable adoption process profoundly impacts the revenues stream and projections.

Fig.1. Selected Landis+Gyr smart meters with different specs

Landis+Gyr E330/350

(US market standard)

Landis+Gyr E350

(General residential use)

Source: Landis+Gyr website as of 30/11/2018

In addition, governmental legislation can either hinder (e.g. *Power of Choice* legislation in Australia) or help (e.g. *Third Energy Package*'s 80% AMI penetration requirement for adhering member states in the EU) providers' growth prospects.

3. Providers and Competitive Landscape

The smart metering market presents a globally low level of concentration, being highly fragmented in terms of providers that are competitors with each other. In such a context, Landis+Gyr dominates the market with a 18% share, followed by Osaki (11% - Japan), Sagemcom (9% - France), Itron (8% - US), Mitsubishi (7% - Japan); the others account for the 47% (2017 figures, Fig. 3 below). While in the Americas regions it is possible to see a sort of diversity in terms of smart metering companies providing services in the region, with Landis+Gyr and Sagemcom competing with the US providers (Itron, Hubbell, Elster) for the largest market share, in the EMEA market the business is somehow concentrated into the hands of few European firms (Landis+Gyr, Sagemcom, ZIV) but still the foreign providers have significant market share. The particular situation in APAC highlights a strong concentration of Japanese and Chinese providers. This trend can be easily seen in China, where it is almost impossible for foreign manufacturers and providers to operate in the country. Nonetheless, Landis+Gyr reaches a 5% penetration in the APAC market (2017 figures) due to its pioneering

approach in the smart metering sector and by winning key contracts in countries like Vietnam, Australia and India; the other key players are indeed Osaki (leader with 33% of the market share) followed by Mitsubishi (21%).

The competitive landscape presents high barriers to entry. The main determinant is the Research & Development (R&D) expense. Landis+Gyr, in particular, has the highest R&D as a fraction of Sales with respect to its peers (9.43% against 5.67% of peers' average).

Fig. 2. Global market shares in the smart metering sector

Source: Frost & Sullivan 2017 and 2015, estimates

4. Customers

Customers in the smart metering sector are primarily represented by the utilities. There is a medium-low concentration of customers, but still key utilities are vital for the business. In fact, the sector is profoundly based on historical commercial relationships and reputation. This allows smart meter providers to ensure a profitable business continuation by winning key contracts with in a certain market in order to be mandated future installations and projects. Nonetheless, every customer is important, thus leading to a fragmented client base. In 2017, Landis+Gyr's largest ten customers accounted for more than 30% of the revenues, but no single customer represented more than 10% of the total revenues. Smart meter buyers however have a moderate bargaining power as they have the possibility to delay or terminate a contract for any reason, adding volatility to the providers' revenue

stream. In addition, utilities are price-makers, since they often operate as government-sponsored monopolies or in oligopolistic markets.

Id. Industry Expansion

The smart metering industry is expected to grow sustained by three global key drivers: decarbonization, decentralization and digitalization.

1. Drivers

Decarbonization. Decarbonization refers to the global transition towards renewable energy resources. This means increased grid complexity and intermittent power generation derived from solar, hydroelectric and wind sources. Energy generation and consumption currently account for two-thirds of global greenhouse gas emissions. Both the public and private sector are emphasizing efforts to reduce the power generation industry's carbon footprint, a trend shared by the global community as a whole. Efforts against carbon dependence inevitably spur the growth of renewable energy which necessitates a flexible and reliable power grid since it is impacted by weather conditions and does not provide constant power supply. The advent of renewable resources will be a major driver for future smart meter and AMI sales in the future. As a matter of fact, Landis+Gyr for example responded to such demand in 2017 by launching the *Iron Horse Energy Storage & Solar* project in Arizona for Tucson Electric Power (TEP), providing the energy storage system. TEP, in particular, aims at producing 30% of its power with renewable resources by 2030, exemplifying the growing need for a smart grid.

Decentralization. In response to the decentralization of the power generation base stemming from the adoption of renewable energy, the clientele itself, following technological advancements in energy storage and self-generation, is morphing from "*consumers*" to "*prosumers*", the latter term referring to both consumers and producers of energy. A decentralized system is able to successfully integrate localized renewable energy sources and deliver efficiency gains while still ensuring a reliable power supply. These trends engender additional challenges for utilities to ensure a safe grid. In the USA alone, losses linked to security breaches are estimated at USD 150 billion per year. AMI

technology facilitates the integration of decentralized grid elements engaged in localized consumption and production into the smart grid. Increasing participation of consumers in energy generation presents additional challenges for utilities to ensure a safe energy grid and a reliable power supply.

- *Increased public focus on energy efficiency and supportive regulation.*

The growing focus by the general public and governments on energy efficiency and sustainable energy sources has resulted in favorable regulation for decentralization. A decentralized system is able to successfully integrate localized renewable energy sources and deliver efficiency gains, while still ensuring a reliable power supply. In particular, the ability to integrate residential or community solar home energy management systems, electric vehicles and grid storage requires a decentralized approach to connectivity and control predicated on AMI-like networks, field area communications, and distributed intelligence and applications. Therefore, supportive regulation has been put in place in many countries, driving AMI rollouts and thereby ensuring that metering technologies can reach a critical mass.

- *Distributed energy generation and storage.*

AMI facilitates the integration of decentralized power grid elements engaged in localized energy production and storage by tracking detailed inflow and outflow of electricity in the system. It allows for the measurement and thereby remuneration of surplus energy generated from, for example, home solar or home energy storage, enabling consumers to take advantage of feed-in tariffs. Thereby, individual households evolve beyond pure electricity takeout points, to truly interactive producers and consumers (prosumers). This in turn creates potential for additional grid services, such as demand response, flexible ramping and consumer engagement, leveraging these "*Distributed Energy Resources*". In addition, localization of renewable energy generation and storage sources (like solar panels and electric vehicles) has led to formation of smaller scale local microgrids acting independently or in conjunction with the main electrical grid. These microgrids require additional monitoring as well as communication capabilities to be able to operate smoothly as part of the overall power network.

- *Grid safety and security.*

The social cost of power outages is estimated to be at least USD 150 billion per year in the United States alone (Source: *US Department of Energy, The Smart Grid Report*) and increasing decentralization of the grid poses additional challenges to grid reliability due to increased complexity of the power flows. Utilities are measured against key performance indicators such as SAIFI and SAIDI (System Average Interruption Frequency/Duration Indices) and are penalized by the regulators for the outages. Smart metering technology acts as a critical element of overall grid security, ensuring prevention of supply disruption through improved load management and active demand monitoring. Moreover, it also facilitates instant alert and outage management systems in case a disruption has occurred, minimizing any related penalties. In addition, advanced metering infrastructure contributes to the revenue protection of the utilities by enhancing power theft monitoring and prevention capabilities.

Digitalization. Increasing digitalization and convergence of communication technologies offers solutions for utilities to address challenges by facilitating more accurate energy uses, data collection and analysis and improve supply resource planning. The growth in the economy impact of the *Internet of Things* (IoT) has been estimated by McKinsey&Co to reach USD 11.1 trillion by 2025 from the 2015 USD 3.9 trillion, with a total base of over 30 billion installed endpoints. Utilities follow this trend seeking to better manage their networks, planning and investments following their business cycles. Market opportunities in the smart metering industry lie in the provision of adequate software to allow utilities to better manage and streamline their energy flow. R&D expenditure is thus an important metric in judging a firm's efforts towards improvement. For instance, Landis+Gyr invests in R&D double the industry average of about 5%. Hence, firm's efforts in software implementation will be the key driver for a sustainable success in the smart metering industry. This can be determined also by witnessing how the AMI devices are currently the most sophisticated technology available and by recognizing the digitalization as the vital trend to follow as technology progressions will have an impact mostly on the software rather than on the hardware.

- *Increasing value in data aggregation and analytics.*

Economies of scale play an important role in the smart metering market with increasing incremental value at vanishing marginal cost to the utility company from each additional data point collected. As the AMI rollout continues, the value-add of adding further elements to the smart metering network increases. Thus, once a utility has invested in back-end AMI systems (data and network control centers, substation infrastructure and respective enterprise applications) and gained the benefits of smart metering solutions, it will likely look to expand those capabilities to its entire user base. In addition, modern AMI networks and supporting software solutions allow for more sophisticated data management and analytics, enhancing grid management, distribution automation and monitoring capabilities of the utilities.

- *Demand side management and resource optimization.*

Cost focus and the need for resource optimization put increasing pressure on utilities to improve their demand side management capabilities. Increased digitalization and interactive grid solutions help utilities to analyze consumption patterns to anticipate surges or drops in power consumption, thereby minimizing potential grid disruptions and increasing overall grid effectiveness. In addition, enhanced customer analytics allow utilities to actively manage consumer demand by means of targeted load management, smoothing programs or time-of-use pricing strategies.

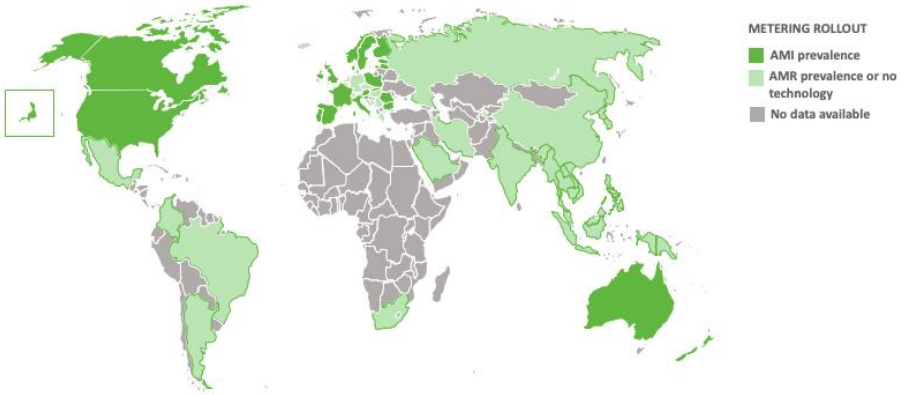
- *Evolving customer experience.*

Smart metering systems can today also help to improve customer engagement and satisfaction by adding and enabling consumer-facing applications. Utilities no longer require customers to mail in their consumption readings or have on-site visits so inspectors can manually read their meters. In addition, AMI solutions allow more granular billing information to be released to customers, empowering them to actively track and monitor their power consumption as well as to develop awareness of environmental issues and energy costs.

2. Process

Fig. 3. Overview of the global smart meters

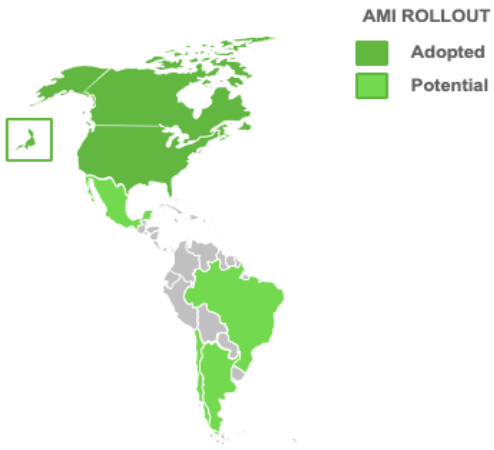
rollout by technology in 2017



Source: Landis+Gyr, Berg Institute, Frost&Sullivan, estimates

In the next three to five years the smart metering industry growth will still be mainly driven by the AMI rollouts and replacements in the advanced economies, with the emerging markets that will progressively advance their status by increasing AMR penetration rates to then switch to AMI. Indeed, after this period, the smart metering industry will face a mature market situation in the advanced economies, with the emerging markets on the hedge for the future business opportunities. This outlook will obviously be subject to any kind of technological advancements in terms of hardware that might affect the projections. Right now, the smart metering industry is facing a shift from hardware implementation and R&D to software implementation. The technology behind the devices related to the smart metering business is quite advanced and the digitalization process – which is shaping every business across the world and the "enterprise" as a whole – will provide new challenges mainly on the "services" side of the business: data management and analytics, grid management.

Fig. 4. Americas smart metering technology rollout in 2017



Source: Landis+Gyr, Berg Institute, Frost&Sullivan, estimates

3. Regional outlook

Americas (inc. Japan)

North America's smart metering market is led by the United States (90 million smart meters expected to be installed by 2020 in addition to the 50 millions in 2014), followed by Canada (12 million smart meters expected to be installed by 2020 in addition to the 6 millions in 2014).

- *United States.*

  The main driver for rollout has been the ARRA (*American Reinvestment and Recovery Act*) between 2009 and 2011. Since 2011, the deployment of smart meters still happens, but at a much slower pace. 43% of US households have a smart meter. US utilities are now focused on integrating and optimizing information gathered by smart meters to provide benefits and new capabilities to customers (automated budget assistance, bill management tools, energy use notifications, smart pricing, demand response programs) and system operators.

- *Canada.*

Smart metering initiatives have been promoted by necessity as well, while for the other countries the main driver has been government and laws. Canada has vast distances and hostile terrains separating power resources from consumers and Canada's smart grid technology is much more advanced with respect to other countries.

South America's deployment of smart metering solutions is still poor. The region offers one of the most attractive markets for smart grid investments, but opportunities are developing slowly. The Italian *Enel* is a key player in the South American market due to its subsidiaries and continuous investments in the region, such as the recent *AES Electropaulo*, the largest energy distributor in Brazil, alongside deploying various smart grid pilot projects.
In the region, Mexico and Brazil certainly represents the key markets for smart metering providers. Argentina and Chile are potential candidates for smart metering solutions in the coming years.

- *Brazil.*

  ANEEL (*Agência Nacional de Energia Elétrica*) targeted to replace 63 million electricity meters with smart meters by 2021. In 2012, the energy regulator made the smart metering rollout mandatory for new customers starting from 2014 and optional for the existing ones. Brazil is focused on art metering deployments to help reduce fraud, energy theft and inefficiency which costs the country $4 billion each year.

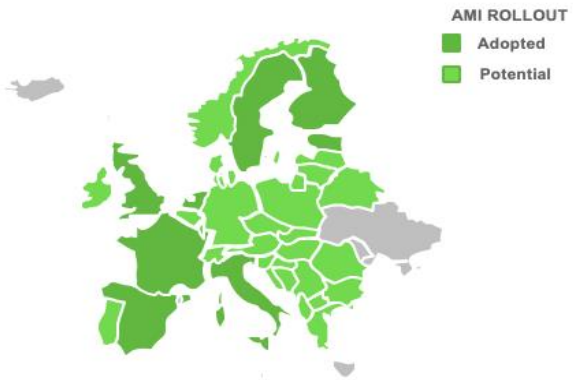
- *Mexico.*

  Many smart metering pilot programs are being boosted in an effort to respond high rates of energy thefts, power outages and poor energy infrastructure. Mexico represents the second largest market for the smart metering industry after Brazil. 21 million smart meters have been targeted to be installed by 2020 in the country.

Japan is betting on smart metering solutions especially after the Fukushima disaster (2011). The country expects to deploy 80 million smart meters by 2020. The Japanese government has set a target of about 80% of the nationwide electricity consumption to be monitored using smart meters from 2015 to 2020. By 2024, the 80 million Japanese residential customers are expected to have a smart

meter installed at home. The deployment plan has been set to let utilities see the demand in real time and adjust pricing accordingly. The devices also should encourage customers to save more energy. *TEPCO*, one of the two main utilities, announced to expand its rollout program from 7 million to 27 million smart meters (roughly 100% of their customers) by 2021. Unlike most other nations, reliability is not considered as an issue in Japan as the country has already undertaken significant generation and transmission infrastructure improvements in a plan of investments began in the 1990s.

Fig. 5. Europe smart metering technology rollout in 2017

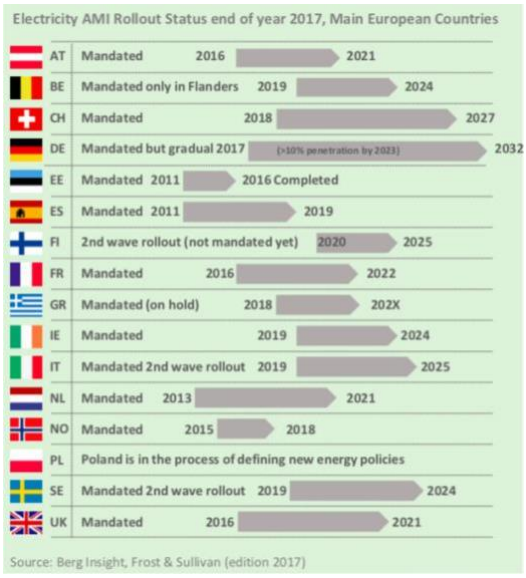


Source: Landis+Gyr, Berg Institute, Frost&Sullivan, estimates

EMEA

Europe's deployments (Fig. 5) are especially successful despite relatively low starting points. The key driver is the legislation of many countries promoting (or forcing) the replacement of old metering devices with smart meters. In fact, legislation for electricity smart meters is in place in the majority of the members states of the European Union, providing a legal framework for deployment and regulating specific matters (e.g. timeline of rollout or technical specifications for the meters). The European Commission expects 200 million smart meters to be installed by 2020 following the *Electric Directive 2009/72 EC*, implying more than 70% of end-users covered. By 2012, there were about 90 smart metering pilot projects and national rollouts catalogued in Europe (Fig. 6).

Fig. 6. Europe roll-out plan: implementation speed and penetration rate of at least 80% of all consumers by 2020



- *Italy.*

  Italy was one the pioneers for smart metering adoptions in Europe, as ENEL started deploying smart meters in 2001 with "*Telegestore*" and "*Insernia*" projects. By 2014, its rollout covered the 95% of the customers.

- *Sweden.*

  By 2014, Sweden completed its rollout without legal decision about it. A legal decision was set to make monthly meter reading available to customers, leading to a decision by distribution companies to rollout smart meters in order to meet this requirement. Sweden was a member of "*EnergyWatch*" project together with Finland, with the purpose of helping utility consumers to gain awareness, change behavior and reduce energy consumption.

- *Netherlands.*

From 2012 to 2014 a small-scale rollout took place in the country. The Dutch parliament evaluated the pilot project and approved additional implementing regulation for the large-scale rollout by 2020.

- *United Kingdom.*

In 2007 the UK started its smart meter rollout program with the "*Energy Demand Research Project*" by installing 58,000 smart meters. It ended up with real energy savings, leading to following rollouts. In 2011, the government announced a full rollout by 2015 to then reach the installed 53 million smart meters by 2020, after a year of trials and tests on the communication infrastructure.

- *France.*

35 million smart meters have to be deployed by 2020. The "*Linky"* project led by ERDF (*Électricité Réseau Distribution France*), now *Enedis*, employs 250,000 smart meters aimed at improving knowledge of residential consumption through the combined effects of an appropriate customer panel and a modelling method adapted to more frequent reading of consumer indices.

- *Spain.*

Almost 2 million smart meters has been deployed by 2013 and a rollout of 100% has been mandated by 2019 following the *Royal Decree* in 2007. A special group of Spanish utilities, the "*Spanish Utility Consortium*", has been formed in 2009 to take on the smart meter's rollout in the country.

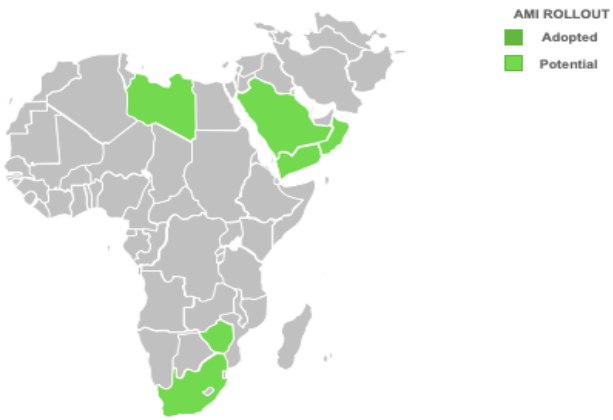
- *Germany.*

In Germany there has not been yet an explicit commitment for a national rollout. In fact, the rollout to existing 500,000 smart meters by 2013 is still in a pilot phase. The German situation is due to a negative CBA that showed a lack of benefits for the consumers of a full rollout in the country, delaying the program to 2020.

- *Finland.*

By 2014, Finnish utilities had completed smart meters rollouts covering 98% of all consumers.

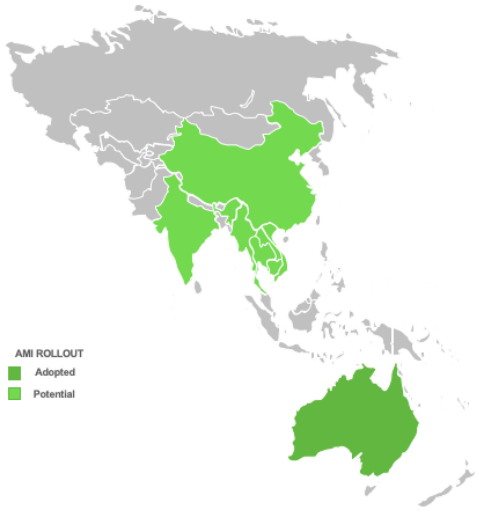
Fig. 7. Middle-East smart metering technology rollout in 2017



Source: Landis+Gyr, Berg Institute, Frost&Sullivan, estimates

Middle-East region (Fig. 7), such as Libya and the United Arab Emirates, are starting their path into smart metering led by the few technologically advanced cities (e.g. "*Dubai Smart City*" project).
Africa's smart metering initiatives are very poor due to a complete lack of electric infrastructure across the all continent.
South Africa and Zimbabwe lead the smart metering introduction initiative.

Fig. 8. Africa smart metering technology rollout in 2017



Source: Landis+Gyr, Berg Institute, Frost&Sullivan, estimates

APAC (Fig. 8 above)

China is the country with the largest number of smart metering installation in the region, expecting to double by 2020 reaching 74% of penetration (from 153 million to additional 250 million smart meters) and has led to become the largest market for smart metering solutions in the world. Electricity companies continue with extensive deployments as part of a national plan aimed at improving the national electricity infrastructure and shifting towards green energy supply. The "*Smart Grid Corporation of China*" is the country's only state-owned electric utility and the largest one in the world covering 88% of power supply in the country.

Australia is focusing on governmental programs aimed at improving demand management, energy security and energy efficiency in the country. Severe energy shortages in 2006 and 2007 contributed to the improvement of the energy supply system. Rollout areas were chosen on a CBA basis as part of the "*National Smart Metering Program*".

India is one of the fastest-growing economies in the world and its industrial growth suffers of inadequate energy availability due to distribution losses, mismatch of demand and supply, a poor electricity transmission and thefts. The Indian Ministry of Power is advocating for smart grid

investments to solve these issues and since 2012 eight pilot projects took place, including the 1,400-smart-meters "*Bangalore Pilot Project*", the 2,000-smart-meters "*Puducherry Smart Grid Projects*" and the 500,000-smart meters deployment in New Delhi in 2011. The "*India Smart Grid Task Force*" (an inter-ministerial group) was formed to discuss the development of cost-effective metering solutions applicable in the country. However, there are still infrastructural development and capacity building issues that need to be addressed before a large-scale implementation. Existing smart meters are still being read manually and there is absence of associated infrastructure for meter data analysis. The insufficient regulatory focus and policy on smart metering still need to be solved.

CHAPTER II: LANDIS+GYR

IIa. Forecasting methodology: historical statements, key assumptions and forecasts

Valuation in the smart metering industry can be quite difficult. When assessing a company's target value, one should assess the market before; and this is the approach used in this dissertation paper as well. Certainly, assessing how much a company is worth can be easy or difficult whether the revenues stream can be more or less easy to predict.

First, it is vital to fully understand how the industry works, its dynamics, the wide sector in which it operates. Then, the product/service profile need to be done; how it works, who are the end-consumers, how it creates value are key questions.

Furthermore, how the industry can be impacted by current trends and other industries' developments is a good approach. It helps going deeper into the industry knowledge and is vital in the context of assessing the industry future path.

When evaluating a company, the revenues are the key driver of the analysis and represents the most difficult aspect to understand and forecast. A basic approach is to focus particularly on the revenues stream and predictions to then treat the main cost categories as a percentage of sales.

To forecast the smart metering industry growth is not an easy task. This is mainly due to the high level of uncertainty that stands behind the revenues of smart meters providers. The two main issues derive from the utilities and the regulators. In fact, smart metering providers depend on utilities, which depend on the regulatory entities. Usually, utilities offer large, multi-year contracts that require installation of a significant volume of meters. In addition, utilities may have the faculty of delaying, suspending or terminating a contract for any reason (as in the case of Landis+Gyr), with the consequence of potentially sinking the sales income for the provider.

Furthermore, utilities depend heavily on regulators. This can be both a benefit or a drawback for smart meter providers. The best scenario refers to countries where the adoption of a certain technology or the deployment of smart metering solutions is mandatory, utilities must comply with the authorities and providers of devices can easily count on the country mandated adoption project. Then, a particular feature of the utility industry is the extensive budgeting and the long regulatory process that characterize the government mandated rollout programs and replacement cycles. Sales cycles (time period between the bid for a contract and its redemption) can take, for the most complex projects, up to four years. A smart metering provider could be subject to significant financial expenses without ensured success or recovery of the initial costs of deployment.

Income Statement forecast

The choice of the method is original. The market has been divided into the three regions identified by Landis+Gyr for its business: Americas, EMEA and APAC. Once split, each region is much easier to identify and analyze. In particular, for each macro area, key countries (in terms of data availability and influence on the business) are assessed on their own. Then, as smart meters are supposed to be one for every household, the first data to analyze are the population, the number of households and the number of smart meters per household on each country and region. In such a context, it is easier to have a driver of future sales by linking the business to the population's growth, household's growth and new smart meters deployments mandated in each country and region.

To perform this task, the percentage of households with a smart meter installed at the time of the valuation (i.e. 2017 – Fiscal Year 2018) is increased each year to reach the expected penetration rate at the end of the valuation period (i.e. 2022 – Fiscal Year 2023). The number of households with a smart meter for every year is found by multiplying the penetration rate for that year with the number of households of the same year. The number of households each year is then found by multiplying the number of households at the time of the valuation and increasing it over the years for the same rate (i.e. the population growth rate, kept constant as well).

Finally, the number of households with a smart meter each year is subtracted by the number of households with a smart meter of the previous year, thus leading to the additional smart meters that should be produced in order to meet the expected penetration rate for the year. Once the number of additional smart meters is obtained, that number is multiplied by the average price for a smart meter (which considers both manufacturing, supply and maintenance costs) in order to have the aggregate revenues for the region. The sale price in this very industry is difficult to determine, as smart metering businesses provide customers with ad-hoc services leading to a personalized price that is not possible to know for each client and not possible to predict. The price is multiplied by the inflation rate each year in order to consider the increase in inflation. The result coming from the applied method (further referred to as "*standard method*") is then merged with a second approach (further referred to as "*Berg method*") additional smart meters expected by Berg Institute, leading to an average of the two methods in order to have less reliance on a single one and, hypothetically, less variance on the results. Moreover, the revenues for the region are multiplied by the market share of the specific smart meter provider (i.e. Landis+Gyr in the valuation) in order to find the firm-specific sales income. In this

scenario as well, an average is performed between the standard method and the Berg method, in which the additional smart meters expected by Berg Institute are multiplied by the same price used before.
As revenues forecasts depends heavily on data availability, due to data scarcity of Middle-East and Africa, the revenues for Landis+Gyr takes into account the sole EMEA region (even considering that Middle East and Africa have very low impact on the EMEA aggregate revenues). For APAC and Americas regions, key countries for which data are available are considered, where the Group has business.

Once revenues have been forecasted, Cost of Goods Sold ("COGS") calculation was on a percentage of sales basis. COGS percentage of sales to be used for the estimates was calculated by considering the average COGS/Sales for the period 2014-2017, resulting in a 69% ratio. Here, the assumption of keeping COGS constant over time (and not including the management's purpose of a lighter capital structure and cost savings) is consistent with our thought that in this particular business, the outsourcing of critical components leads to a higher bargaining power of suppliers (electronical equipment and semiconductor manufacturers) versus their clients (Landis+Gyr and peers). This is a result of the concentrated market for key technological components supply into the hand of few international consolidated players (Foxconn, Jabil, Qualcomm, etc.). Hence, it is particularly difficult to perform cost cutting over a certain ratio, as already Landis+Gyr did in the previous years. Gross profit then resulted as the difference between Sales and COGS for each year.
For the EBITDA decomposition, Selling, General & Administrative expenses ("SG&A") and Research & Development expenses ("R&D") were considered. SG&A costs have been determined on a percentage of sales basis as well, calculated on the historical average for the period 2014-2017, resulting in a 16% ratio. R&D expenses have been calculated in the same way as the other cost figures but finding some consistency with the management policy of keeping a relatively high R&D/Sales ratio, which is one of the competitive advantages of Landis+Gyr with respect to its competitors. The ratio, kept constant over the forecasts period, resulted 10%.
From the EBITDA, the EBIT decomposition has been found by subtracting Depreciation and Amortization costs ("D&A"), calculated from the average historical D&A/Sales.
Once calculated the operating profit (i.e. EBIT), the financial income/expense of the company have been treated on a percentage over sales basis, carried forward for the period the analysis refers to.
A different approach has been used to forecast the interest expense in the following five years.

In particular interest expenses have been calculated by means of a debt schedule that took into consideration a revolving credit facility Landis+Gyr signed in March 2018. A revolving credit facility refers to an agreement between a bank and a borrower where the borrower has a fixed amount of credit available that can be used anytime. For Landis+Gyr, the revolving credit facility involved $240m provided by a bank syndicate led by UBS Switzerland AG and its purpose was to fund the Group's working capital requirements. The agreement had a maturity of five years. In June 2018, Landis+Gyr has drown $130m. Repayments under this agreement came in the form of a rate based on the LIBOR (London Interbank Offered Rate) plus a margin from 0.6% to 1.3% (subject to a ratio calculated every year – here it has been assumed the range median), plus a quarterly commitment fee of 35% of the applicable margin of the unused portion of the revolving credit facility, plus an agency fee of $40,000, plus one-time arrangement fee of $840,000 capitalized in "Other Long-Term Assets" in the balance sheet (to be amortized over the 5-year period). The assumption behind the debt schedule is that Landis+Gyr drawn the first tranche ($130m) as of June 2018 as stated in Landis+Gyr annual report 2017) and will draw the second tranche ($110m) the fourth and fifth years ahead due to estimated cumulated working capital requirements that exceeded the first tranche coverage at the end of the third year. For simplicity, no cash or short term assets has been taken into consideration for the revolving credit facility repayment and it has been assumed it will be entirely repaid at the end of the fifth year, with payment rebalanced in the fourth year to take into consideration the second tranche of credit drawn. The table below will resume the main results behind the debt schedule calculation.

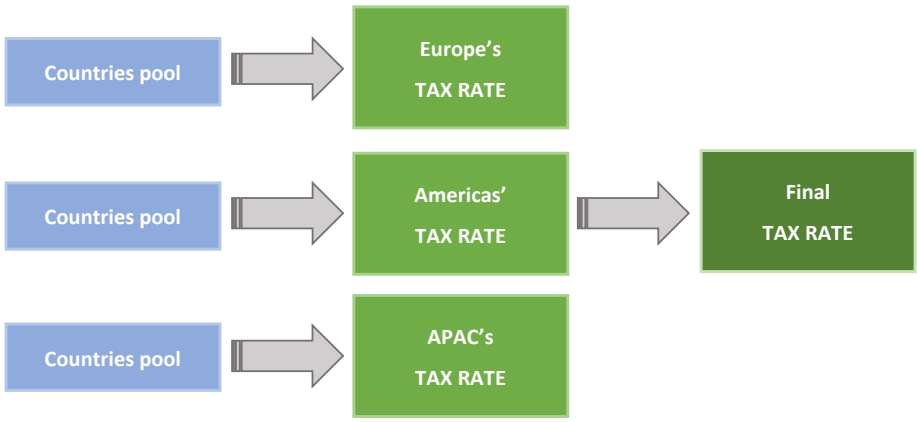
Tab. 1. Detail of debt schedule used to forecast interest expense

DEBT ASSUMPTIONS	**1st tranche**	**2nd tranche**		**Rate: 4,07%** *= 3.12% LIBOR 1-Year on 25th November plus margin of (0.6+1.3)/2*		
Loan amount ($m)	**130**	**110**				
Maturity	**5 yrs**	**2 yrs**				
year		**1**	**2**	**3**	**4**	**5**
Opening balance	130,00	130,00	106,03	81,09	55,13	28,11
Total payment		(29,26)	(29,26)	(29,26)	(29,26)	(29,26)
Interest payment		**(5,29)**	**(4,32)**	**(3,30)**	**(2,24)**	**(1,14)**
Principal payment		(23,97)	(24,94)	(25,96)	(27,02)	(28,11)
Closing balance		106,03	81,09	55,13	28,11	-
Interest payment		(5,29)	(4,32)	(3,30)	(2,24)	(1,14)
Quarterly committment fee (annual)	35%	(1,57)	(1,57)	(1,57)	(1,57)	(1,57)
Agency fee (annual)		(0,04)	(0,04)	(0,04)	(0,04)	(0,04)
Total interest payment		**(6,90)**	**(5,92)**	**(4,91)**	**(3,85)**	**(2,75)**

Source: Landis+Gyr Annual Report 2018, Eikon TR, Bloomberg, estimates

Furthermore, taxes calculation focused on the three macro regions the sales refer to: APAC, Americas and Europe. The rationale for this computation is that Landis+Gyr operates globally, so that a proper tax rate should considerdifferent taxation across countries. The different tax rates have been provided by KPMG website. The final tax rate include an average of the tax rates for the three regions, computed as the average of the countries they represent (as illustrated in Fig. 9 below).

Fig. 9. Detail of tax rate calculation using the weighted average method by country



Source: KPMG.com

Resulting tax rates have been then weighted by considering the percentage of sales of Landi+Gyr in each region, to come to the final consolidated tax rate to apply to the EBT (i.e. "Earnings Before Taxes").

Net income resulted from the difference between EBIT and EBT.

The following table (Tab.2) include the assumptions used to estimate Landis+Gyr's financial statements for the period 2019-2023.

Tab. 2. Detail of Income Statement and Balance Sheet assumptions for the forecasts

Assumptions										
Period End Date	**FY14A**	**FY15A**	**FY16A**	**FY17A**	**FY18A**	**FY19E**	**FY20E**	**FY21E**	**FY22E**	**FY23E**
Income Statement										
% of Regional Revenues on Total (corrected)										
% Americas	52.7%	55.7%	55.0%	54.7%	56.0%	50.9%	65.1%	76.9%	56.6%	74.3%
% EMEA	37.0%	36.2%	37.6%	38.5%	28.3%	30.5%	29.0%	28.0%	34.6%	16.5%
% APAC	10.3%	8.1%	7.4%	6.8%	9.8%	10.7%	10.4%	10.3%	13.0%	9.2%
Revenue growth			5.5%	4.7%	5.1%	5.1%	5.1%	5.1%	5.1%	5.1%
COGS (% of sales)	68.1%	69.1%	67.3%	70.7%	68.8%	68.8%	68.8%	68.8%	68.8%	68.8%
SG&A (% of sales)	17.2%	15.6%	17.4%	15.1%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%
R&D (% of sales)	9.9%	9.4%	9.8%	9.4%	9.6%	9.6%	9.6%	9.6%	9.6%	9.6%
Impairment (% of sales)	0.0%	2.2%	3.6%	0.0%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%
Amort. of Goodwill and Intangibles (% of sales)	2.7%	2.7%	2.1%	2.1%	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Investment Income (% of sales)	-0.6%	-0.4%	-0.9%	0.4%	-0.3%	-0.3%	-0.3%	-0.3%	-0.3%	-0.3%
Interest Income (% of sales)										
Taxes Americas (% of EBIT)				28.5%	28.5%	28.5%	28.5%	28.5%	28.5%	28.5%
Taxes EMEA (% of EBIT)				23.3%	23.3%	23.3%	23.3%	23.3%	23.3%	23.3%
Taxes APAC (% of EBIT)				23.9%	23.9%	23.9%	23.9%	23.9%	23.9%	23.9%
EBT Americas	5.22	(0.53)	(16.61)	26.76	16.24	7.24	12.38	18.64	12.99	19.63
EBT EMEA	3.66	(0.34)	(11.36)	18.87	8.22	4.34	5.52	6.78	7.94	4.35
EBT APAC	1.02	(0.08)	(2.23)	3.33	2.83	1.52	1.98	2.49	2.98	2.44
	FY14A	**FY15A**	**FY16A**	**FY17A**	**FY18A**	**FY19E**	**FY20E**	**FY21E**	**FY22E**	**FY23E**
Balancesheet										
ASSETS										
Accounts receivables	0.18	0.19	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Other receivables (% of sales)	1.0%	0.8%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Notes receivables (% of sales)	4.7%	6.3%	0.0%	0.0%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%
Prepaid Exp. (% of sales)	0.7%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
Restricted Cash (% of sales)	0.0%	0.0%	0.0%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Other Current Assets (% of sales)	1.9%	1.0%	1.0%	1.0%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%
Inventory	7.9%	7.4%	7.0%	7.0%	7.3%	7.3%	7.3%	7.3%	7.3%	7.3%
Other Intangibles (% of sales)	35.1%	30.1%	25.6%	22.0%	28.2%	28.2%	28.2%	28.2%	28.2%	28.2%
Accounts Receivable Long-Term (% of sales)	1.5%	0.1%	0.2%	0.1%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Deferred Tax Assets. LT (% of sales)	1.2%	1.8%	0.8%	0.9%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%
Other Long-Term Assets (% of sales)	0.8%	2.1%	1.9%	2.0%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%
LIABILITIES (% of sales)										
Accounts Payable	0.12	0.10	0.09	0.09	0.10	0.10	0.10	0.10	0.10	0.10
Accrued Liabilities	0.03	0.03	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Warranty Provision	0.01	0.02	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02
Payroll and benefits payable	0.04	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Debt and current portion of shareholders loan	0.07	0.07	0.14	0.08	0.09	0.09	0.09	0.09	0.09	0.09
Tax Payable	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Current Liabilities	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Shareholder loans	0.19	0.14	-	-	0.08	0.08	0.08	0.08	0.08	0.08
Warranty provision- non current	0.02	0.04	0.00	0.01	0.02	0.02	0.02	0.02	0.02	0.02
Pension and other employee liabilities	0.06	0.06	0.04	0.03	0.05	0.05	0.05	0.05	0.05	0.05
Deferred tax liabilities	0.06	0.06	0.03	0.02	0.04	0.04	0.04	0.04	0.04	0.04
Tax provision	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Other long-term liabilities	0.02	0.02	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03
Comprehensive income and other	0.05	0.06	0.03	0.02	0.04	0.04	0.04	0.04	0.04	0.04
Minority Interest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cash Flow Statement	FY14	FY15	FY16	FY17	FY18E	FY19E	FY20E	FY21E	FY22E	FY23E

Source: Landis+Gyr Annual Reports 2018, 2017, 2016, 2015, estimates

IIb. Competitive strenghts

Landis+Gyr is one of the main players in the smart meter market, with total generated revenues of $1.5bn in 2017, grown by 16% from the previous year. This market presents a low level of concentration. Globally, L+G dominates the market, with an 18% market share, and most competitors hovering under the 10% threshold. Entry barriers are high due to significant investment requirements in R&D; legal specs required by regulatory authorities; important switching costs; and the strength of relationships of established players with key customers and countries. Competition is high: L+G

is one of the market-leaders in EMEA and the Americas, as a result of its reputation and ability to supply the best metering solution stack.

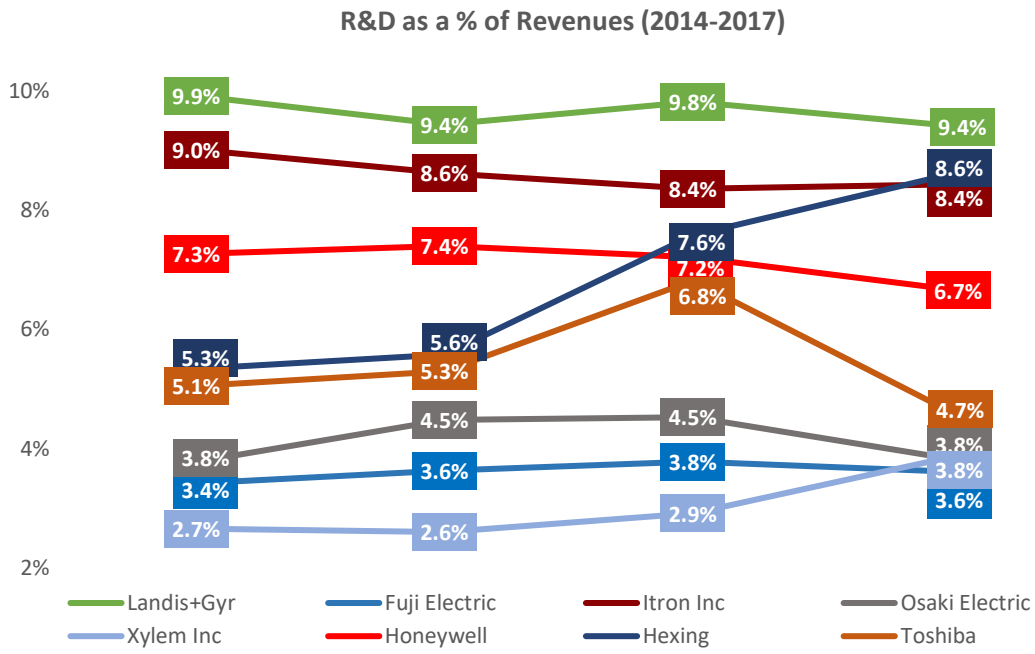
Overall, there is a fragmented number of customers and a concentrated supplier base. In 2017, L+G's largest ten customers accounted for more than 30% of its revenues, but no single customer represented more than 10% of the total revenues. Even though the customer base is fragmented, each single customer of Landis+Gyr can delay or terminate a contract for any reason, adding volatility to L+G's revenue stream. In addition utilities are price-makers since they often operate as governmental sponsored monopolies or in oligopolistic markets. For these reasons, the buyer bargaining power is moderate-high. L+G also depends on a few, large key suppliers that deliver mission-critical components. The top five suppliers accounted for 59% of material expenses in 2017 (Foxconn, Jabil, Celestica, Flextronics, Sanmina), while the largest, Foxconn, accounted for 32%. As a result, supplier bargaining power is high

L+G stronghold is the American continent. L+G has a market share of 38% in North America and of 44% in South America. In both regions it is the largest company ahead of primarily American competitors. L+G is thus well positioned to capture a large part of the growth stemming from meter deployments in Latin America (CAGR of 40% from 2017 to 2021) as well as from rollout programs in North America and in Europe. In APAC, competitive pressures (*Herfindahl-Hirschman index* equals 816 indicating an unconcentrated industry) from Japanese producers squeeze L+G's market share to a mere 5%. With respects to growth, historically L+G has focused its strategy on developed markets. Indeed, in the foreseeable future, most growth opportunities will come from APAC (CAGR 2017-2021 supposed to be 30%) and South America. Despite an unfavorable competitive environment, L+G is striving to capture part of the growth offered by APAC through targeted acquisitions (last one has been Acumen in Australia) and a change in the regional management team.

Landis+Gyr has built its reputation worldwide thanks to its customer service and its commitment to implement new technologies and new solutions in the metering sector. Landis+Gyr assists its customers anywhere in the world, with exceptional capabilities and a ready team of experts providing the best solutions. Its commitment to research can be inferred by the management guidelines throughout the past years and the vast product offering the company provide to its customers, but also it can be determined by comparing its research and development expense with its competitors'. Indeed, L+G destinates approximately 10% of its annual revenues to R&D expense (see Fig. 10 and

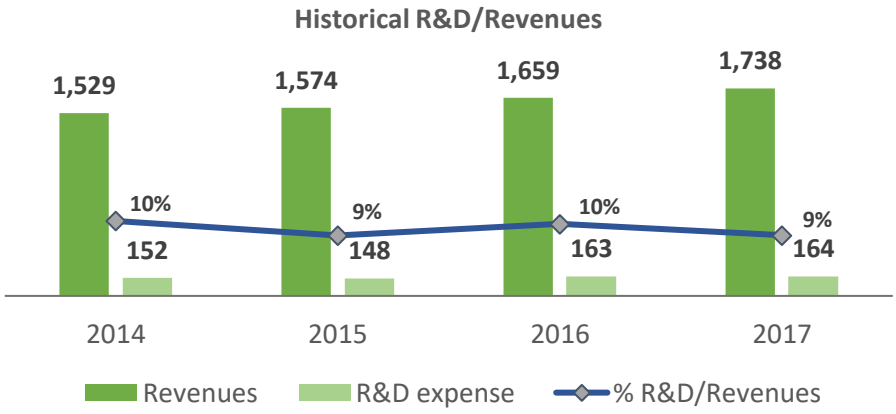
Fig. 11 below). The table belows also include the pool of selected comparable companies for Landis+Gyr, based on the smart metering business.

Fig. 10. Historical R&D expenses per peer



Source: Companies' annual reports

Fig. 11. Historical R&D expense of Landis+Gyr as a percentage of revenues

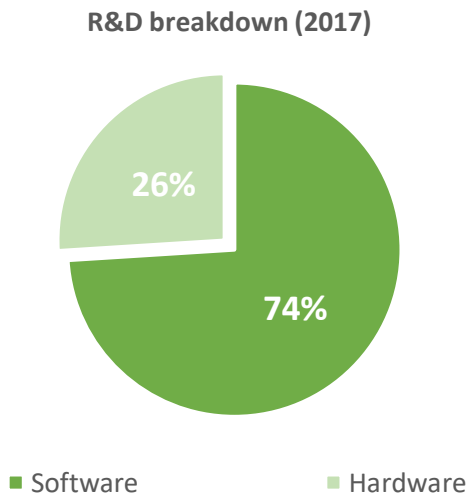


Source: Landis+Gyr annual reports

Management guidelines for the future focus on keeping this trend and continuously feed research and development in order to meet the growing needs of customers and in order to be aligned with the growing interest worldwide to reduce the energy waste and to focus on renewable resources.

Landis+Gyr efforts in R&D come in a decentralized system, with 4 different research labs spread across the globe and "*20 localized, dedicated engineering centers* [that] *secure timely adaptation and customization of the solutions to local needs and regulatory requirements"(*Landis+Gyr, Annual report 2017*)*. The Company counts 696 patents owned and number 501 pending patents as of 2017 (*Landis+Gyr annual report 2017*). As a consequence of the huge advancements in digitalization worldwide, Landis+Gyr is shifting towards higher expenditure in software development by moving some funding previously employed in the hardware implementation. This strategy ia also consequence of the reach of a sort of "technology standard" in the metering market, where the current smart meters represent the most advanced technology that can be put in place right now. In the next future the R&D expense will certainly support in part the hardware implementation, but the future moves towards more efficient software deisgned to satisfy consumer needs that are increasing in complexity and in terms of customization. Hence, software is what really makes the difference. Landis+Gyr in 2017 has spent 74% of R&D funding in software implementation, while the remaining 26% has been spent in hardware advancements (see Fig. 12b elow), with more than 1400 software engineers (23% of Group's total workforce) designated for this task.

Fig. 12. R&D breakdown by destination



Source: Landis+Gyr annual report 2017

"*The current focus is on identifying and developing solutions aimed at increasing Internet of Things (IoT) enablement and leveraging the use of big data and advanced data analytics to improve forecasting, network modelling, resource management strategies and system reliability. Consequently, almost 75% of our R&D investments are software related and reflect the strategic importance of software and firmware in our offering*" (Landis+Gyr, Annual report 2017).

A part from research and development expenditures, Landis+Gyr has become a leading global player in the smart metering sector as a consequance of its efforts in building and retaining valuable commercial relationships by ensuring an excellent, reliable and punctual customer service and a quality and durable product offering in the industry. Much of this results derives from L+G pioneering approach in the European and American markets. As an example, the 23th of August, 2018, Landis+Gyr secured to Enedis SA (subsidiary of Groupe EDF – "Electricitè de France" – holding of the Italian Edison S.p.A.) the supply for a tranche of "*Linky"* Smart Meters, the French smart meter standard shown in Fig. 13 (Landis+Gyr Press Release, "*Landis+Gyr Secures Enedis Contracts for Next Tranche of Linky Smart Meters*", 28th August 2018). The "Linky project" started in France in 2007, with Landis+Gyr being a trusted partner of Enedis since then, when the work first began to upgrade of all the 35 million residential meters in France. The Swiss company is going to provide 20% of the new 13 million smart meters to be deployed in France. According to Landis+Gyr, Enedis manages the operation, maintenance and development of the public electricity distribution network for 95% of continental France, which gives a frame of the contracts and relationships that L+G retains.

Fig. 13. Landis+Gyr *Linky*

Source: Landis+Gyr website

In the Americas region, the last achievement has been an agreement between Landis+Gyr and KUA (Kissimmee Utility Authority, the 6th largest municipally-owned electric utility in Florida) for supplying advanced metering infrasteucture and a meter data management system to support the Florida utility's 74,000 customers (Landis+Gyr Press Release, "*KUA selects Landis+Gyr for Advanced Metering*", 2nd August 2018).

Ultimately, Landis+Gyr expansion in the APAC markets is a consequence of its brand awareness and reliable reputation built over the decades. In APAC, where the market share sees the predominance of Chinese companies, foreign companies such as Landis+Gyr can count on being assigned key pilot projects in the new deployment projects such as the ones in Vietnam and India. Also, Landis+Gyr established a joint venture in Australia with Pacific Equity Parners for the acquisition of Acumen Metering Business (Landis+Gyr Press Release, "*Landis+Gyr and Pacific Equity Partners Announce Joint Venture for Aquisition of Acumen*", 24th May 2018).

In Japan (geographically in the Asian region but considered within the Landis+Gyr America's reportable segment), L+G signed a vital agreement with TEPCO (largest electricity company in the Country) in 2017 to support the deployment of 27 million meters and devices based on AMI technology and exploring future IoT potential (Landis+Gyr Press Release, "*TEPCO and Landis+Gyr Sign agreement to Explore Future Options for Leveraging IoT Network*", 7th September 2017). In January 2019, the Swiss company announced to have reached 20 million meters installed and to be on schedule for the 2020 completion of the TEPCO project.

It's a story of success and commitment, that of Landis+Gyr, being recognised by international awards such as the "*Frost&Sullivan Global Company of the Year* " received in 2017 in Nashville, Tennessee for the 4th time in a row, and the "Grid Edge Award" in 2017 in San Jose, California.

Another vital success factor is Landis+Gyr's capability in retaining key employees and attracting experienced ones, sometimes from competitors. As a matter of fact, in June 21st 2018 the Company appointed Susanne Seitz as the new Executive Vice President and Head of EMEA and Member of the Group Executive Management of Landis+Gyr. Susanne Seitz was formerly Vice President for EMEA Region in Siemens.

Success, overall, built on huge efforts that the Company dedicates within the entire supply chain. As an example, Landis+Gyr undergoes different initiatives in order to ensure the repsect of the highest standard in terms of quality, product reliance and durability. The E-Sourcing platform for example is a virtual marketplace the Group launched in order to quickly and efficiently select its suppliers, with a transparent tender pricing that geenrated in 2017 annual cost savings for the Group of approximately

4-5% (competition pushes prices down). Then, the Zero-Defects Initiative is an improvement initiative aimed at proactively addressing structural and systemic quality issues (and reduce associated costs) during the supply chain process by a focused and automated analysis of the devices. The Global safety Stock Program, in the end, consists in an on-site inventory of strategic components to ensure supply continuity, preventing supply shortages.

All these qualitative factors are difficult (almost impossible) to quantify, but still they represent a warranty behind an optimistic valuation process, especially when "selling" an investment advice to other people. They also consists on qualitative checks that should be reflected by the company's financial results at the end of the year.

IIc. Landis+Gyr valuation and results

1. Valuation

The Group has been valued by means of the two most common valuation techniques applied in the industry: the Discounted Cash Flow and the Trading Multiples approach. The first consists in assessing the company's value by discounting the future cash flow generated by the Group (forecasted based on various assumptions seen before) to find the implied enterprise value ("EV") of the company. The target price estimated for the Group is then found from the equity ("E") bridge (*E = EV – Debt + Cash&Cash equivalents*) which is divided by the number of shares outstanding; the second approach is a relative valuation based on comparable companies and their trading multiples. Once found a pool of peers of the company object of analysis, the key ratios are calculated (EV/EBITDA, EV/EBIT, P/E, etc….) giving rise to a set of multiples: the average of the each multiples' category is then multiplied by the analyzed company's respective income statement or balance sheet figure (e.g. peers' average EV/EBITDA is 10x, which is multiplied by the company's EBITDA to find its EV). Several multiples can be obtained with this method, but most of them may result useless for many reasons (for certain industries only few multiples are significant for a comparison between peers, some multiples may result negative due to negative income statement values, multiples then may be useless because too high or too low with respect to the average due to poor economic and financial condition of a peer, etc….).

Multiples generally give the lowest valuation with respect to other valuation techniques (DCF, precedent transactions, Sum Of The Parts, etc….) and they reflect the current situation of a company

by considering the its actual financial results and the industry/macroeconomic actual results. For this reason, in a company valuation, to this approach is usually given a 70%-80% discount, meaning that the final target price is a weighted average of the ones arising from the various valuation methods used. For Landis+Gyr, to the multiples approach has been given a 10% impact on the final target price, due to a final valuation that has been considered too low and in order to give more importance to the forecasts of the DCF method. For this reason, only the DCF process is considered in this dissertation, also because the mutiples approach is quite straightforward and easy (it is widely used because of its fast application and because even if not precise, it still gives an actual snapshot of the company with respect to its competitors). Details on the multiples analysis will be included in the Appendix of this paper.

To find the target price of Landis+Gyr by means of the discounted cash flow method, the forecasts of the Income Statement (previously calculated) are needed. From the estimated revenues for the 5-year time horizon considered for this analysis, estimated Cost of Goods Sold are subtracted to find the Gross Profit. From the Gross Profit, Selling, General and Administrative expenses, R&D expenses and Depreciation and Amortization ("D&A") are subtracted to find the estimated EBIT (Earnings Before Interests and Taxes) for each year fo the analysis (note that the distinction between EBIT and EBITDA (Earnings Before Interests, Taxes, Depreciation and Amortization) is not relevant at this point and the D&A expenses can come together with the SG&A and R&D expenses, that typically are considered to calulcate the EBITDA from the Gross Profit and then the D&A are subtracted to find the EBIT). The EBIT then has been decomposed into three determinants to find the NOPAT (Net Operating Profit After Taxes, i.e. the EBIT minus the tax expense). These three determinants are simply the different EBITDA per Region (EMEA, Americas and APAC), which has been multiplied for the respective average tax rate of the respective pool of coutnries in the same was as done before when forecasting the Net Income.

To find the Free Cash Flows ("FCF") of Landis+Gyr, from the NOPAT have been added back D&A expenses and subtrated Capex ("capital expenditures" i.e. the investments in fixed assets estimated for the Group that are dobe to expand the business) and the change in the Net Working Capital ("ΔNWC", i.e. the change every year in the working capital requirements needed to run the core business, calculated as Accounts Receivable + Inventories – Accounts Payable on each year).

Once calculated the FCF each year, the last main assumption of the DCF model refers to the Terminal Value. The Terminal Value ("TV") is calculated in order to include in the valuation all the cash flows a company can generate after the last forecasted year. The TV is used because it assumes (fairly) that

the company will continue to exist after the forecasting period and thus it gives back a simplified number that should take into consideration the future value of the cash flows generated by the company. The TV calculation needs one assumption: the rate at which the company is expected to grow in the far future. Usually, a simplified way of proceeding is to apply the GDP growth expected for the country of the company. The growth rate is particularly "sensible" in the sense that the Terminal Value, as it includes all the future cash flows, provides a final valuation that largely depends on its value, which is heavy reliant on the growth rate. Hence, different growth rates typically have the consequence to let the final target price vary considerably. Note that the Terminal Value formula is the following:

$$TV = \frac{FCFt * (1 + g)}{r - g}$$

, where g is the growth rate, r is the WACC (explained below) and FCFt is the last FCF estimated for the company

In our case, growth rate has been estimated to be 2.51%, calculated as the avearage of the long-term GDP growth estimated for Americas (2.0%), EMEA (2.5%) and APAC (4.8%) economies (Tab.3).

Tab. 3. Detail of Terminal Value growth rate calculation

Region	Weight	LT GDP Growth	Weighted GDP Growth
Americas	54.34%	2%	1.09%
EMEA	33.21%	2.5%	0.83%
APAC	12.45%	4.8%	0.60%
Terminal Growth Rate			**2.51%**

Source: Bloomberg, estimates

Ultimately, future Free Cash Flows need to be discounted to the present. To do this, it is needed the Wiighted Average Cost of Capital ("WACC"). The WACC formula is easy and simple, but deriving its determinants it's not straightforward. The WACC formula is the following:

$$WACC = \frac{D}{V} * rd * (1 - Tc) + \frac{E}{V} * re$$

, *where D/V is the amount of debt ("D") over the enterprise value of the company and E/V is the amount of equity ("E") over the enteprise value of the company, re is the cost of equity, rd is the cost of debt and Tc is the tax rate*

Landis+Gyr's debt for the WACC calculation has been determined by taking the average of the 2015-2018 D/E ratios of the company, which gave a result of 15.6%. To find the corresponding D/V, the following reverse formula have been applied:

$$\frac{D}{V} = \frac{\frac{D}{E}}{1 + \frac{D}{E}}$$

Then, E/V can be found by using the following formula:

$$\frac{E}{V} = 1 - \frac{\mathrm{D}}{\mathrm{V}}$$

This can be done under the assumption that EV = E + D. In reality, as it should have been done for the equity bridge seen before, the enterprise value includes more determinants such as minority interests and preferred equity (and for what concerns the debt, it should include the portion of unfunded pensions as well, i.e. the portion of pensions that are not secured by the company's assets recorded on this purpose, since they represent a debt a potential acquiror will have to face when in charge, thus diminishing the overall value of the company during the acquisition). Despite this, it has been chosen to keep formulas in a more academic background.

The D/V and E/V ratios resulted to be 13% and 87% respectively.

These determinants were particularly simple to calculate. Things change when coming to the determination of the cost of debt and the cost of equity, which involve more steps and assumptions.

The cost of debt ("rd") can be determined as follows:

$$rd = rf + spread$$

, where rf is the risk-free rate (i.e. the hypothetical rate of return of an investment with no risk) and the spread corresponds to the "premium" paid for choosing one investment with respect to one another

The spread, or "credit spread", is higher if the risk associated with an investment (or a company) is higher, and it depends on the credit rating associated to the company's assets (i.e. the probability of default).

Generally, credit rating for a company is calculated by specialized agencies such as Standard&Poor's, Moody's and Fitch (the "Big Three"). A company (listed or not) can decide to be covered by these agencies, letting the market aware of its financial health, which has its pros and cons.

Nevertheless, the credit spread can be calculated in a simply way (not as accurate as the one present on the market, if any) by considering the Interest Coverage Ratio ("ICR") associated with a table of credit ratings that provide the spread value depending on the ICR value. The mentioned table can be found on Damodaran website. Tab.4 below highlights how it has been used.

Tab. 4. Detail of the spread calculation with the ICR method

FYE 31/07/2018	
EBIT	47.90
Interest expe	1.20
ICR	39.92

ICR Range		Rating	Spread
> 0.499999	0.499999	D2/D	18.60%
0.5	0.799999	C2/C	13.95%
0.8	1.249999	Ca2/CC	10.63%
1.25	1.499999	Caa/CCC	8.64%
1.5	1.999999	B3/B-	4.37%
2.00	2.499999	B2/B	3.57%
2.5	2.999999	B1/B+	2.98%
3.00	3.499999	Ba2/BB	2.38%
3.5	3.999999	Ba1/BB+	1.98%
4.00	4.500000	Baa2/BBB	1.27%
4.5	5.999999	A3/A-	1.13%
6.00	7.499999	A2/A	0.99%
7.5	9.499999	A1/A+	0.90%
9.5	12.499999	Aa2/AA	0.72%
12.5	**> 12.5**	**Aaa/AAA**	**0.54%**

Source: Damodaran website, Landis+Gyr Annual Report 2018, estimates

The ICR is calculated as the ratio between the EBIT and interest expense of the company at the time of the analysis. It simply shows how many fiscal years it gets for the company to cover its financial obligations. The lower the result, the higher the risk of default and the higher the spread. Why this? Suppose to be an individual asking for a loan. A bank will assess your risk based on your historical indebtedness, on your assets (properties, bank deposits, etc.) and somehow by considering the economic conditions of the economy you're asking money in. If the borrower is insolvent or has not many warranties, the cost of debt for the debtor will be high, meaning that the lender is asking for a higher return (or compensation) to bear the risk of insolvency of the individual who is asking money.
For Landis+Gyr, with a light capital structure and low indebtedness, a 39.9 ICR gave the maximum credit rating (AAA/Aaa), corresponding to a 0.54% spread.
Then, the spread is added to the risk-free rate. Generally, the risk-free rate is assumed to be the 10-year treasury bond yield of the representative country in the economic area the company operates or it has its headquarters.
As Landis+Gyr main operations are held in the United States and North America, the benchmark is the yield on the 10-year US Treasury Bond.
On November 2018 the risk-free rate for the 10y US Treasury Bond was 3.05% (*source: Eikon Thomson Reuters_USGG10YR*).
Overall, the cost of debt for Landis+Gyr resuted to be 3.54%.

The cost of equity requires more steps than the cost of debt. By using the Capital Asset Pricing Model ("CAPM"), the cost of equity ("re") can be calculated as follows:

$$re = rf + \beta e\ (MRP)$$

, where βe is the beta equity (briefly the risk factor associated to a certain asset or class of assets with respect to the market) and the MRP is the Market Risk Premium (i.e. the difference between the expected return over a market potfolio and the risk-free rate, meaning the extra return an investor asks for investing in risky assets instead of investing in risk-free assets)

So much theory stand behind the Beta definition and calculation that a thesis dissertation will not be sufficient to cover, and it will be avoided here, by taking some assumptions for granted.

The beta can be found by taking the betas from the comparable companies' pool because they're listed and their betas are public measures that can be found on almost all the main financial websites and softwares (e.g. Yahoo Finance, Bloomberg, Thomson Reuters).
However, to reduce the variance of the results and trying to end up with a more precise value, for the beta calculation multiple approaches have been considered.
The first method (typically avoided by investment banks because time-consuming and not considered very accurate) comes with the linear regression of the excess returns of the stocks of the comparable companies (monthly observations) in the five years before the time in which the anlysis is done. Other approaches include the inclusion of the industry beta for electronical equipment available on Damodaran website, the betas for the companies available on Eikon Thomson Reutersand Yahoo Finance. Thus, these four methods averaged provided a beta of 1.02. This beta is considered to be levered (it means that it implictly includes the debt of the companies involved in the calculation). To find a "pure" unlevered beta, the following formula must be applied:

$$\beta_U = \frac{\beta_L}{1 + \frac{D}{E} * (1 - Tc)}$$

, *where D/E is the average of the comaprable companies' D/E and Tc is the tax rate weighted for the three macro regions that has been calculated before*.

The unlevered beta resulted 0.72, which is consistent in an industry that is reliant on governments and regulators. Finally, the unlevered beta must be relevered to consider only the debt amount carried by the company object of analysis. By applying Landis+Gyr average D/E used before, the relevered beta for L+G resulted 0.80 (Tab.5 below highlights this process).
This process is done to "clean" the beta from the risk carried on by industry peers that may have different capital structures and different risk profile. In this way, a cleaned beta is then associated with the company's own risk in order to find the exact risk factor for that company.

Tab. 5. Detail of beta results

	Levered beta	D/E	Tax Rate
Landis+Gyr	-	0.08	
Itron	1.08	1.45	
Hubbell	1.24	1.09	
Apator	0.87	0.37	
Fuji	1.47	0.34	
Hexing	-	0.10	
Osaki	0.55	0.07	
Toshiba	0.62	0.28	
Honeywell	1.02	0.99	
Xylem	0.83	0.96	
Players average	0.96	0.57	25.4%
Industry	1.08		
Yahoo Finance average	1.12		
Thomson Reuters average	0.92		
Unlevered Beta	**0.72**	→	

D/E	Relevered Beta
0.16	**0.80**

Source: Companies Annual Reports 2018, Bloomberg, Eikon TR, Yahoo Finance, Estimates

Once found the beta for Landis+Gyr, the Market Risk Premium has been taken from Damodaran website. In particular, it has been choose to consider the US MRP. Many assumptions can be done under the choice of the MRP and all can be true. The leading assumption stands behind the risk-free rate choice: once done, the MRP should be consistent with the country chosen for the *rf*. Thus, the MRP resulted to be 5.08%. Overall, the cost of equity resulted to be 7.06%. Does the re be higher than the rd? Definitely. As the debt repayment is an obligation the borrower has with the lender, financial debt (generally bank debt) has the highest ranking in the repayment hierarchy and must be paid before everyone else. New debts will cost more for a company as the new lenders must wait for the repayment of the previous lenders, leading to higher risk associated with their borrowing to the company. In such a context, equity represents the last step in the repayment hierarchy as it does not constitute an obligation for the borrower. Equity is risky as its repayment derives from the availability of funds after all the repayments made before by the company to prioritized stakeholders.
Given these results (resumed in Tab.6 below), the WACC, calulcated by applying the formula showed above, was 6.46%.

Tab. 6. WACC calulcation results

WACC	
Risk free rate	3.00%
MRP	5.08%
Beta unlevered	0.72
D/E	15.60%
Beta relevered	0.80
Re	**7.06%**
Tax rate	**25.43%**
Risk free rate	3.00%
Spread	0.54%
Rd	**3.54%**
D/V	**0.13**
E/V	**0.87**
WACC	**6.46%**

Source: Bloomberg, Companies Annual Reports 2018, Damodaran, estimates

Given the WACC, the long-term growth rate and the last-year estimated Free Cash Flow, the TV can be calculated and all the cash flows discounted to the year of the analysis, resulting in an Enterprise Value for Landis+Gyr of approximately $2.4bn. By applying the EV formula (or analogally the equity bridge), the equity value for Landis+Gyr resulted to be $2.3bn (low debt amouting to $0.14bn and cash and cash equivalents for $0.10bn that partially offset each other with a low impact on the equity value). Dividing the equity value for the number of shares outstanding (i.e. 29.5 million shares), the target price for the Group resulted $82.4 per share, which at the USD/CHF spot rate on November 30th, 2018 of 1.00 resulted CHF82.38.

Considering the closing share price of Landis+Gyr on November 30th 2018 (i.e. CHF62.05), the upside potential for the Group was estimated to be 32.8% from the DCF method.

The multiples approach resulted in a target price of CHF43.5 per share and was weighted 10% on the final target price for the investment recommendation of Landis+Gyr, with the DCF considered at 90% of its value.

In conclusion, Landis+Gyr was expected to value CHF78.5 per share, with an upside potential of 26.5%.

CHAPTER III: INVESTMENT RISKS

IIIa. Strategic Risks

- *Long and unpredictable sales cycles (High***)**

  A particular feature of the utility industry is the extensive budgeting and the long regulatory process that characterize the government mandated rollout programs and replacement cycles. Sales cycles (time period between the bid for a contract and its redemption) can take, for the most complex projects, up to four years. L+G could be subject to significant financial expenses without ensured success or recovery of the initial costs of deployment.

- *Increase in competition (High)*

  Recently, aggressive competitors have begun to expand in markets where L+G is strong. Low-cost providers are particularly dangerous because they are able to compress margins, weakening L+G's high-quality-high-price position. Furthermore, companies specialized in communications and networking technologies could develop new software and enter in the market as new competitors.

- *Geopolitical risk (Moderate)*

  A large part of L+G's revenues are generated in countries that are subject to political instability. Economic crisis, escalation of violence and political tensions could damage operations resulting not only in a poorer operative performance, but also in a lower ability to obtain financing. This risk is moderate-high in Latin America, Middle East and in the Korean Peninsula.

- *Technology risk (Moderate)*

  The smart meters' industry is R&D intensive and L+G's long- term prospects depend on how it will able to develop new technologies. If other companies anticipate the time-to-market of new systems and software, L+G's business will be hurt: targeted R&D is thus crucial (L+G is a market-leader) to keep competition at bay.

IIIb. Operational Risks

- *Risk related to limited number of suppliers (High)*

  For certain components and sub- assemblies, L+G depends on a few third-party suppliers. Although L+G is striving to move to a dual- supplier model for key components, current

technical and financial reasons have impeded it to do so. The failure of these parties to deliver on time key components would prevent L+G to continue its operations resulting in loss of revenues and in reputational damage. In FY17 in EMEA, such supply-chain disruptions resulted in over USD 20 million loss in EBITDA.

- *Risk related to nature of customers (Moderate)*

  Usually utilities offer large, multi-year contracts that require installation of a significant volume of meters. Furthermore, most of L+G's contracts allow the customer to delay, suspend or terminate the contract for any reason. Should the multi-year contract be terminated, operations will be negatively affected.

- *Cybersecurity Risk (High)*

  Recently, cybersecurity has become a serious concern due to the increase of both uncoordinated individual attacks and sophisticated and targeted attempts to infiltrate L+G's internal systems. Without adequate countermeasures, L+G could be subject to loss of customer data, theft of intellectual property and product failure. Those factors would adversely affect global operations of the company due to loss of revenues, contractual damage costs and negative reputation.

- *Attract and retain key employees (Moderate)*

  Being R&D intensive, the meter industry requires the presence of highly skilled engineers and technicians. L+G's prospects depend also on the ability of the company to attract, motivate and retain key employees. A deterioration of the relationship between employers and employees would not only push the latter to work for the competitors, but would also lead to strikes, labor shortages and disruptions. The recent appointment of Suzanne Seitz as head of EMEA, taken away from Siemens, highlights L+G's ability to attract talent.

- *Production flaws (Moderate-High)*

  L+G could lose clients in case there was a deterioration of product quality: L+G is a self-proclaimed top-tier producer in terms of quality and reliability. In case of products' failures, the company would incur in contractual damage costs and reputational damage. L+G is currently shifting its production to third parties in outsourcing deals: as a result, there is an overall risk that external manufacturers will not be able to guarantee L+G's quality standards. The company has nonetheless put into practice best-practice guidelines and obligations to which external suppliers are held to.

IIIc. Natural Risks

- *Catastrophic Events (Low)*

  L+G has production facilities in 4 countries (Mexico, Brazil, Greece and India) and it has offices in various others. Some of the company's buildings are located in areas that have historically been subject to earthquakes, typhoons and flooding. Being a global company, a natural event is unlikely to put a halt to operations as a whole but could have significant regional impact. The probability of a catastrophic event is low.

IIId. Financial Risks

- **Foreign currency risk (High)**

  Being a global company, a significant portion of revenues and costs is denominated in foreign currencies. L+G is thus subject to risk of fluctuations of exchange rates. Exchange rates of operating subsidiaries (APAC, Latin America, Middle East) could significantly fluctuate against the USD. Since financial statements are prepared in USD, a strong appreciation of the USD against local currencies would negatively affect L+G's profitability. As of September 2018, the company owns $21.7 million in foreign exchange contracts.

- **Impairment of goodwill and intangibles (Low)**

  A loss of customers or a decrease in value of patents and intellectual properties could lead to an impairment of goodwill and intangibles that represent 68.3% of total assets. Due to the high value of intangible assets, an impairment would have negative consequences on investor's confidence as L+G's future growth depends on its technologies and licenses.

IIIe. Legal Risks

- *Legislative initiatives (High)*

  L+G operates in a heavily regulated industry. Every country has its own jurisdiction and regulatory process. Changes in regulation could delay or terminate installation of new meters and roll-out programs, resulting in loss of revenues and the impossibility to expand the business. Furthermore, regulatory agencies could impose special requirements on new devices and L+G would incur in increased costs to comply with them.

- *Risks related to lawsuits (Low)*

  L+G is currently under investigation in various countries for a series of alleged infringements of local laws. In Brazil, the company is accused of installing meters vulnerable to fraud while in Romania it is charged of violation of Romanian competition law. If definitely found guilty, L+G will be obliged to pay fines that would adversely impact its operations and would damage its reputation. As of March 2018, L+G was condemned to pay USD 7.1m to Romanian authorities for violation of the local competition law. However, other lawsuits are in pre-trial stage and the likelihood of being found guilty is low.

- *Changes in accounting guidance and taxation (Low)*

  L+G is subject to several jurisdictions. As a result, tax obligations could vary and, especially in those countries that allow substantial carryforwards, operations would be affected. Changes in tax rates, tax ruling and tax laws could negatively impact L+G's effective tax rate. Furthermore, new accounting guidance could be introduced, resulting in different financial results

CHAPTER IV: LANDIS+GYR CURRENT RESULTS CONFIRM THE VALUATION

Landis+Gyr currently trades at CHF75 (*source*: *Bloomberg as of 11/06/2019*) against a CHF78 valuation performed seven months before on November 30th, 2018.
Graph.1 below represents the 1-year target price evolution for Landis+Gyr, highlighting the valuation date and relative closing price as well as the current trading price for the Swiss Group.

Graph. 1. One-year Landis+Gyr share price performance

Source: Factset as of 11/06/2019

Income Statement forecasts highlighted revenues in 2018E for c. $1,855m, while Landis+Gyr actual result was c. $1,765m. Estimated COGS were c. $1,276m against c. $1.189. EBIT resulted c. $158m against estimated c. $43m (forecasts were less optimistic in considering the impact of management's efforts towards a lighter capital structure as a consequence to already achieved good results during the previous fiscal years). Interest expense was c. $7m against forecastes c. $9m. In the end, Net Income resulted to be c. $127m against forecastes c. $21m, as a result of a pessimistic assumption based on Landis+Gyr cost savings.

In conclusion, results have showed to be in line with market analysts' expectations, despite some differences arising from different assumptions on company's future performance and market trends. This valuation was made by using only public available sources, except for insider information concerning the business and company profile of Landis+Gyr provided by its key executives. Forecasting a company without much market data and company's business plan for the years to come is not an easy task. However, results match market feelings about Landis+Gyr, thus leading to a successful end for this work.

APPENDIX

App. 1. Forecasted Income Statement 2018-2022

Period End Date	FY18E	FY19E	FY20E	FY21E	FY22E
Revenues Americas	1,038.80	993.08	1,508.89	2,093.11	1,408.98
Revenues EMEA	525.92	594.93	672.99	761.29	861.18
Revenues EMEA	525.92	594.93	672.99	761.29	861.18
Total Revenues	**1,855.17**	**1,951.61**	**2,319.30**	**2,720.17**	**2,490.19**
COGS	(1,276.19)	(1,342.54)	(1,595.47)	(1,871.24)	(1,713.03)
Gross Profit	**578.98**	**609.07**	**723.83**	**848.93**	**777.16**
SG&A expenses	(303.14)	(318.89)	(378.97)	(444.48)	(406.90)
R&D expenses	(178.90)	(188.20)	(223.66)	(262.32)	(240.14)
EBITDA	**96.94**	**101.98**	**121.19**	**142.13**	**130.12**
Impairment & Assets held for use	(26.82)	(28.22)	(33.53)	(39.33)	(36.00)
Amortization	(27.83)	(46.89)	(55.73)	(65.36)	(59.83)
EBIT	**42.29**	**26.87**	**31.93**	**37.45**	**34.28**
Net interest expense	(13.29)	(12.65)	(12.90)	(13.22)	(11.33)
EBT	**29.00**	**14.22**	**19.03**	**24.23**	**22.95**
Taxes Americas	(4.63)	(2.06)	(3.53)	(5.31)	(3.70)
Taxes EMEA	(1.92)	(1.01)	(1.29)	(1.58)	(1.85)
Taxes APAC	(0.68)	(0.36)	(0.47)	(0.59)	(0.71)
Total taxes	**(7.22)**	**(3.44)**	**(5.29)**	**(7.49)**	**(6.26)**
Net Income	**21.78**	**10.78**	**13.74**	**16.74**	**16.69**

Source: Landis+Gyr, estimates

App. 2. Forecasted Balance Sheet 2018-2022

Period End Date	FY18E	FY19E	FY20E	FY21E	FY22E
ASSETS					
Cash and cash equivalents	**120.98**	**139.16**	**131.97**	**131.68**	**208.36**
Accounts receivable	342.54	360.35	428.24	502.26	459.79
Other receivables	18.13	18.13	18.13	18.13	18.13
Total receivables	**360.67**	**378.48**	**446.37**	**520.39**	**477.92**
Inventory	136.06	143.14	170.10	199.50	182.64
Prepaid expenses and other current assets	**163.29**	**170.37**	**197.33**	**226.73**	**209.87**
Total Current Assets	**644.94**	**688.00**	**775.68**	**878.81**	**896.15**
Property, Plant & Equipment	165.73	167.10	168.72	170.62	172.37
Goodwill and other intagibles	1,715.44	1,668.55	1,612.82	1,547.46	1,487.63
Deferred tax assets (long-term)	21.52	22.64	26.91	31.56	28.89
Accounts receivable (long-term)	9.13	9.61	11.42	13.39	12.26
Other Long-Term Assets	35.23	35.23	35.23	35.23	35.23
Total Fixed Assets	**1,947.06**	**1,903.13**	**1,855.10**	**1,798.27**	**1,736.38**
Total Assets	**2,592.00**	**2,591.13**	**2,630.77**	**2,677.07**	**2,632.53**
LIABILITIES					
Accounts Payable	181.22	190.64	226.55	265.71	243.25
Accrued Liabilities	40.00	40.00	40.00	40.00	40.00
Warranty Provision	47.90	47.90	47.90	47.90	47.90
Payroll and benefits payable	65.20	65.20	65.20	65.20	65.20
Debt and current portion of shareholders loan	118.33	93.39	67.43	40.41	12.30
Tax Payable	9.12	9.59	11.40	13.37	12.24
Other current liabilities	**73.43**	**77.25**	**91.81**	**107.67**	**98.57**
Total Current Liabilities	**535.20**	**523.97**	**550.29**	**580.27**	**519.45**
Warranty provision- non current	25.60	25.60	25.60	25.60	25.60
Pension and other employee liabilities	55.70	55.70	55.70	55.70	55.70
Deferred tax liabilities	32.50	32.50	32.50	32.50	32.50
Tax provision	25.50	25.50	25.50	25.50	25.50
Other long-term liabilities	88.10	88.10	88.10	88.10	88.10
Total Long Term Liabilities	**227.40**	**227.40**	**227.40**	**227.40**	**227.40**
Total Liabilities	**762.60**	**751.37**	**777.69**	**807.67**	**746.85**
Common stock	309.05	309.05	309.05	309.05	309.05
Additional paid in capital	1,475.42	1,475.42	1,475.42	1,475.42	1,475.42
Retained earnings	77.08	87.44	100.77	117.08	133.36
Comprehensive income & other	(35.60)	(35.60)	(35.60)	(35.60)	(35.60)
Total Common Equity	**1,825.95**	**1,836.31**	**1,849.64**	**1,865.95**	**1,882.23**
Minority interests	3.38	3.38	3.38	3.38	3.38
Total Equity	**1,829.33**	**1,839.69**	**1,853.02**	**1,869.33**	**1,885.61**
Total Liabilities And Equity	**2,592.00**	**2,591.13**	**2,630.77**	**2,677.07**	**2,632.53**

Source: Landis+Gyr, estimates

App. 3. Forecasted Cash Flow Statement 2018-2022

Period End Date	FY18E	FY19E	FY20E	FY21E	FY22E
Net Income	**21.36**	**10.36**	**13.32**	**16.32**	**16.27**
Impairment and assets held for use	46.38	48.79	57.98	68.00	62.25
Amortization	27.83	46.89	55.73	65.36	59.83
D&A	**74.21**	**95.68**	**113.71**	**133.36**	**122.08**
Deferred income tax	(5.50)	(1.12)	(4.27)	(4.65)	2.67
Change in Net Acc. Receivable	(33.44)	(18.28)	(69.70)	(75.99)	43.60
Change In Inventories	(14.66)	(7.07)	(26.97)	(29.40)	16.87
Change in Acc. Payable	27.44	9.42	35.92	39.16	(22.46)
Tax Payable	3.93	0.47	1.81	1.97	(1.13)
Other Current Liabilities	12.53	3.82	14.55	15.87	(9.10)
Cash from Operations	**90.86**	**93.28**	**78.38**	**96.64**	**168.79**
Capital Expenditure	(47.68)	(50.16)	(59.61)	(69.91)	(64.00)
Cash from Investing	**(47.68)**	**(50.16)**	**(59.61)**	**(69.91)**	**(64.00)**
Debt and current portion of shareholders loan	(23.97)	(24.94)	(25.96)	(27.02)	(28.11)
Cash from Financing	**(23.97)**	**(24.94)**	**(25.96)**	**(27.02)**	**(28.11)**
Cash Bop	**101.76**	**120.98**	**139.16**	**131.97**	**131.68**
Cash Eop	**120.98**	**139.16**	**131.97**	**131.68**	**208.36**
Net Change in Cash	**19.22**	**18.18**	**(7.19)**	**(0.29)**	**76.68**

Source: Landis+Gyr, estimates

App. 3. Evolution of main ratios 2018-2022

	FY18E	FY19E	FY20E	FY21E	FY22E
Profitability					
ROA	1,63%	0,96%	1,04%	1,10%	0,93%
ROE	1,17%	0,48%	0,54%	0,57%	0,48%
Gross margin	31,21%	31,01%	30,81%	30,61%	30,41%
EBITDA margin	7,73%	7,63%	7,53%	7,43%	7,33%
EBIT margin	2,28%	1,28%	1,18%	1,08%	0,98%
Net profit margin	1,15%	0,46%	0,43%	0,39%	0,36%
Liquidity					
Cash ratio	0,23	0,26	0,24	0,22	0,39
Quick ratio	0,90	0,99	1,05	1,12	1,31
Current ratio	1,21	1,31	1,41	1,51	1,71
Solvency					
LT Liabilities / BV Equity	0,12	0,12	0,12	0,12	0,12
Financial debt / BV Equity	0,06	0,05	0,04	0,02	0,01
Liabilities / Assets	0,29	0,29	0,30	0,30	0,29
BV Equity / Assets	0,71	0,71	0,70	0,70	0,71
Interest coverage	3,18	1,97	2,12	2,21	2,15

Source: Landis+Gyr, estimates

App. 4. Evolution of efficiency 2018-2022

EFFICIENCY	FY14	FY15	FY16	FY17	FY18E	FY19E	FY20E	FY21E	FY22E
Receivables	279,83	302,43	301,40	315,79	342,54	360,35	428,24	502,26	459,79
Inventory	121,52	116,95	115,68	121,40	136,06	143,14	170,10	199,50	182,64
Payables	180,01	153,59	144,20	153,78	181,22	190,64	226,55	265,71	243,25
Net Working Capital	**221,34**	**265,79**	**272,88**	**283,41**	**297,39**	**312,85**	**371,79**	**436,05**	**399,18**
Asset Turnover	**0,55**	**0,57**	**0,64**	**0,68**	**0,72**	**0,75**	**0,88**	**1,02**	**0,95**
Operating cycle	**46,28**	**57,86**	**56,98**	**56,70**	**54,48**	**54,52**	**54,55**	**54,59**	**54,63**
Days of sales outstanding	66,80	70,15	66,30	66,33	67,39	67,39	67,39	67,39	67,39
Days in inventory	42,62	39,24	37,80	36,09	38,91	38,80	38,69	38,58	38,47
Days in account payables	63,13	51,54	47,12	45,72	51,83	51,68	51,53	51,38	51,23

Source: Landis+Gyr, estimates

App. 5. Evolution of main ratios 2018-2022

82.38		Long-Term Growth								
		2,1%	**2,2%**	**2,3%**	**2,4%**	**2,51%**	**2,6%**	**2,7%**	**2,8%**	**2,9%**
	6,1%	83.62	85.69	87.86	90.16	**92.58**	95.14	97.84	100.72	103.77
	6,2%	81.35	83.31	85.37	87.54	**89.82**	92.23	94.78	97.48	100.34
	6,3%	79.19	81.05	83.00	85.05	**87.21**	89.49	91.89	94.43	97.11
	6,4%	77.13	78.89	80.74	82.69	**84.73**	86.88	89.15	91.54	94.07
WACC	**6,53%**	**75.16**	**76.84**	**78.60**	**80.44**	82.38	**84.42**	**86.56**	**88.82**	**91.20**
	6,6%	73.28	74.88	76.55	78.31	**80.14**	82.07	84.10	86.24	88.49
	6,7%	71.48	73.01	74.60	76.27	**78.01**	79.85	81.77	83.79	85.92
	6,8%	69.76	71.22	72.74	74.32	**75.98**	77.72	79.55	81.46	83.48
	6,9%	68.12	69.50	70.95	72.47	**74.05**	75.70	77.44	79.25	81.16

Source: Bloomberg, Eikon TR, Damodaran, Landis+Gyr, estimates

App. 6. Blue-Sky scenario on DCF

Target Price
112,85

Assumptions	
Annual increase in APAC Market Share	**0,5%**
Long-term growth	**3%**
WACC	**6%**

Source: estimates

App. 7. Grey-Sky scenario on DCF

Target Price
52,19

Assumptions	
Annual decrease in APAC Market Share	**0,5%**
Long-term growth	**2%**
WACC	**7%**

Source: estimates

App. 8. Relative analysis: peers' EV/EBITDA

	EV / EBITDA
Landis+Gyr Group AG	7,6
Itron Inc	9,5
Hubbell Inc	9,5
Apator SA	7,3
Fuji Electric Co Ltd	6,7
Hexing Electrical Co Ltd	9,1
Honeywell International Inc	13,1
Osaki Electric Co Ltd	4,8
Toshiba Corp	6,9
Xylem Inc	13,3
Peer Median	**9,1**
EV	2.083,9
Market Value of Equity	2.043,3
EBITDA	145,1
Debt	142,3
Cash	101,8
Price	**43,5**

Source: Companies reports, estimates

App. 9. Peer liquidity and operating benchmarking

	Current Ratio		Quick Ratio		Cash Ratio		Days in Receivables		Days in Inventory		Days in Payables		Operating Cycle	
	2016	2017	2016	2017	2016	2017	2016	2017	2016	2017	2016	2017	2016	2017
Landis+Gyr Group AG	0,9	1,1	0,7	0,8	0,2	0,2	66,3	66,3	37,8	36,1	47,1	45,7	57,0	56,7
Itron Inc	1,7	1,4	1,1	0,9	0,4	0,2	67,8	64,4	48,2	46,8	57,4	54,9	116,0	111,2
Hubbell Inc	2,3	1,9	1,3	1,1	0,5	0,5	51,5	60,2	85,2	80,0	43,3	46,7	136,7	140,2
Apator SA	1,2	1,2	0,8	0,6	0,5	0,3	74,0	70,4	76,8	102,8	52,8	61,4	74,0	173,2
Fuji Electric Co Ltd	1,2	1,3	0,8	0,8	0,1	0,2	114,5	101,5	84,0	92,4	95,6	87,1	198,6	193,9
Hexing Electrical Co Ltd	3,8	4,0	3,5	2,0	0,2	0,4	115,3	140,3	83,1	95,2	111,6	114,8	198,3	235,5
Honeywell International Inc	1,4	1,5	1,0	1,1	0,3	0,4	76,7	73,0	59,4	61,0	80,5	80,7	136,2	134,0
Osaki Electric Co Ltd	1,9	2,1	1,2	1,2	0,3	0,7	76,5	66,6	79,1	97,7	65,6	71,7	155,6	164,3
Toshiba Corp	1,0	1,9	0,6	1,5	0,0	0,1	93,7	89,6	72,9	77,2	146,2	149,8	166,6	166,8
Xylem Inc	1,9	1,5	1,2	1,0	0,6	0,5	69,8	71,8	66,8	69,6	64,2	60,4	136,6	141,5
Average	**1,8**	**1,9**	**1,3**	**1,1**	**0,3**	**0,4**	**82,2**	**82,0**	**72,8**	**80,3**	**79,7**	**80,8**	**146,5**	**162,3**

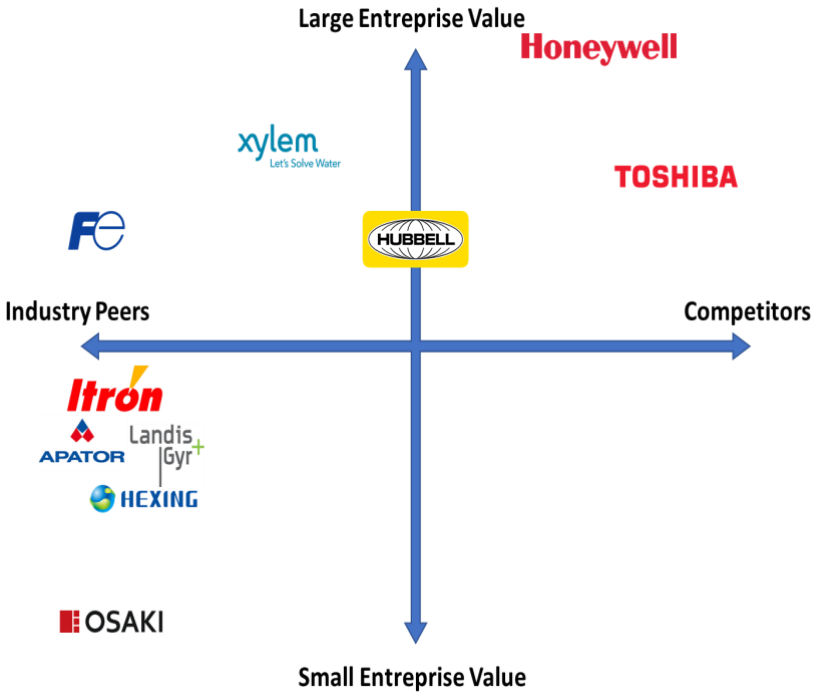
Source: Companies reports, estimates

App. 10. Peers' R&D as % of revenues

	2014	2015	2016	2017
Landis+Gyr	9,9%	9,4%	9,8%	9,4%
Fuji Electric	3,4%	3,6%	3,8%	3,6%
Itron Inc	9,0%	8,6%	8,4%	8,4%
Osaki Electric	3,8%	4,5%	4,5%	3,8%
Xylem Inc	2,7%	2,6%	2,9%	3,8%
Honeywell	7,3%	7,4%	7,2%	6,7%
Hexing	5,3%	5,6%	7,6%	8,6%
Toshiba	5,1%	5,3%	6,8%	4,7%

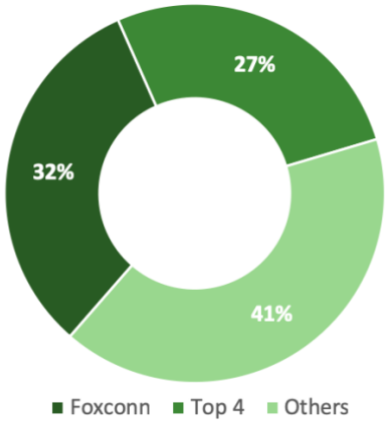
Source: Companies reports, estimates

App. 11. Peers' similarities



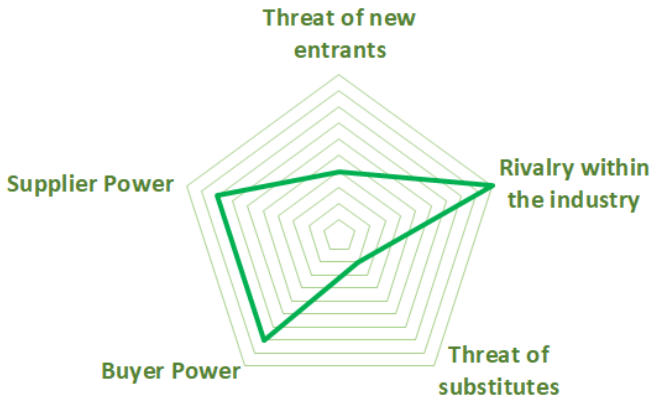
Source: Companies reports, estimates

App. 12. Landis+Gyr top suppliers



Source: Landis+Gyr, estimates

App. 13. Landis+Gyr Porter's five forces



Source: Landis+Gyr, estimates

App. 14. Landis+Gyr Porter's five forces

Main Categories	Subcategories	Assessment
Threat of New Entrants	Scale Economies	Significant economies of scale are required because utilities usually offer large, multi-year contracts that require installation of thousands or millions of meters. Producers, being in a R&D intensive industry, have to produce a significant number of them to sustain competition.
	Product Differentiation	Standalone meters are not differentiated, but Smart Meters offer a higher degree of customization and they are engineered in cooperation with utilities.
	Switching Costs	Switching costs are high in terms of quality. Utilities are used to award new contracts to the same producers if they are satisfied with the previous jobs. New entrants should spend a considerable amount of time and money to convince utilities to switch products.
	Capital Requirements	The meters industry is R&D intensive. Even if a new entrant can outsource the production (it is not technically complicate to produce a meter), to be competitive it must invest significant resources in new technologies and systems such as communication technologies, cybersecurity and Internet of things (IoT).
	Expertise Requirements	Landis+Gyr has several decades of experience in the development and production of meters. Besides, it has hundreds of skilled and highly specialized technicians and engineers. A new entrant should spend a significant amount of money to hire a proper workforce.
	Distribution Channels	One of the key drivers of the meters industry is the relationship between producer and utility. If a company such as Landis+Gyr is able to develop a long-lasting relationship with a utility, it is possible that the former will be awarded with more contracts. A new entrant should invest large resources in developing ties with potential customers.
	Cost Advantage	In emerging markets (APAC, Latin America, Africa), cost advantage is a significant competitive advantage. In those areas low cost providers are able to push down prices and to erode market shares of companies such as Landis+Gyr.
	Legal Barriers	The meters industry is heavily regulated and it is subject to several jurisdictions. A new entrant should spend a considerable amount of money and time to comply with specific features required by each regulator.
Rivalry in the Industry	Concentration	The meters industry is competitive and populated by many companies. Landis+Gyr has 18% of the global market share followed Osaki (11%), Sagemcom (9%) and Itron (8%). Concentration is low. Herfindahl-Hirschman Index equals 816 which indicates an unconcentrated industry.
	Size of Competitors	Landis+Gyr and Osaki have the same dimensions, but most producers are medium to small companies focalized in their native market. For instance, US based Honeywell-Elster is particularly strong in Northern and Southern America, but it has a global market share of 6%.
	Industry Growth	Industry is expected to have a moderate growth of 5.9% CAGR from 2018-2025. (Source: Grand View Research)
	Diversity of competitors	Competitors are mainly from USA, Japan and Europe. However, most of them do not have smart meters as their principal market and base their revenues on electrical equipment, industrial automation and aeronautic engineering.
	Exit Barriers	Due to the significant investments in R&D, it is difficult to exit the market. For Landis+Gyr, the meter industry is the only segment in which it operates. By consequence, exit barriers are higher compared to other competitors.
Supplier Power	Supplier concentration	For most components, Landis+Gyr has multiple suppliers. However, due to technical and financial reasons, it cannot make dual sourcing for some specific components. As a result, Landis+Gyr is obliged to also rely on single suppliers who can charge high prices.
	Product differentiation	Suppliers deliver specific components produced to comply with legal requirements. These products have a medium-high degree of differentiation while raw materials have a low one.
	Dependence on the industry	High for specific components, but low for raw materials.
	Forward integration	Suppliers could be interested in acquiring meters' producers, but, in our opinion, it is improbable. Suppliers do not have the power nor the interest to proceed with the acquisition.
Main Categories	Subcategories	Assessment
Threat of Substitutes	Number of substitutes	There are no substitutes of meters because they are the only way to measure and register information regarding electric, gas and water consumption.
Buyer Power	Buyer Concentration	Main customers are utilities that offer multi-year contracts requiring installation of a considerable number of meters. Ten largest clients accounted for more than 30% of revenues in 2018. One of them is TEPCO, largest utility in Japan, which accounts for all Landis+Gyr's operations in Japan. However, there are thousands of utilities with different sizes to which meters' producers can sell.
	Product Differentiation	Landis+Gyr provides mostly Advanced Metering Infrastructure (AMI) in commercial, residential and industrial models. However, other companies such as Itron, Honeywell-Elster and Sagemcom, can produce them. The real differentiation is between Automatic Meter Readings (AMRs) and smart meters (AMIs).
	Buyers' margin profit	Utilities can choose between many meters' producers and, at the same time, they are monopolistic or oligopolistic in their geographical areas. So, they can have reasonably high margins. However, in certain countries local governments have put in place a process of deregulation. As a result, in the foreseeable future, utilities' margins will be reduced.
	Backward Integration	In theory, large utilities could be interested in acquiring meters' producers. However, due to the fact that utilities are heavily regulated and that, in many countries, they are owned by local or national governments, we think that it is improbable that utilities will integrate vertically.
	Importance to buyers	Meters (especially AMIs) are extremely important for utilities in order to manage energy, water and gas more efficiently. Utilities are indeed willing to invest dozens of billion USD to extend and improve their smart grid infrastructures.
	Buyers' volume	The number of delivered products depends on the size of the utility. Contracts can require the installation of meters in a range that goes from some thousands to millions of units. For example, TEPCO AMI Project required Landis+Gyr to install a total of 27 million AMIs.

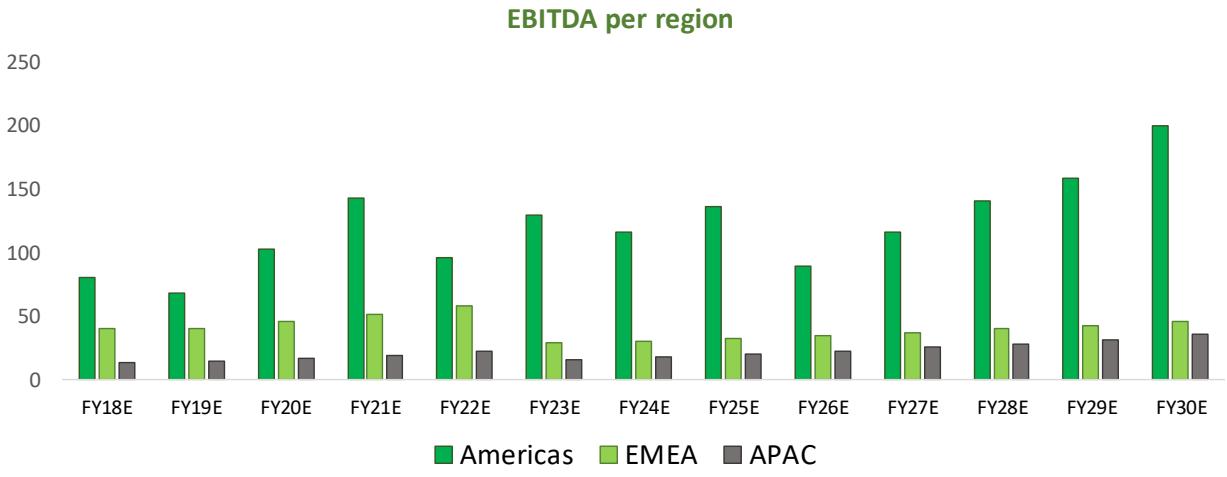
Source: estimates

App. 15. Landis+Gyr SWOT analysis

Strength	Weaknessess
1 – Landis+Gyr is focused on development and production of Advanced Meter Infrastructures (AMIs). As a result, it is well positioned to capture the growth of the smart grids and meters markets.	1 – Revenues are exposed to unpredictable sales cycles. Utilities have long and complicated regulatory and budgeting processes. Time between the bid for a contract and its award can take up to four years.
2 – It operates in the meters industry which will have an average growth rate of 5.9% CAGR from 2018 to 2025. However, CAGR will be even higher in emerging markets (Brazil and Mexico) where Landis+Gyr has a strong presence.	2 – Landis+Gyr operates only in meters segment. It is not a differentiated firm. If the meters market entered in a downturn, the company's profitability would be severely impacted.
3 – Strong reputation and long-lasting relationships with the main and largest utilities in the world. (TEPCO, British Gas, Pacific Gas and Electric Company)	3 – Landis+Gyr's market share in APAC (Excluding China) is extremely low (4%). If meters sales slowed in EMEA and in the Americas, lower results could not be compensated by APAC.
4 – High R&D to sales ratio in 2017 of 9.43%. In the last 4 years Landis+Gyr had an average R&D to sales ratio of 9.64%. It is a company focused on R&D and development of new technologies.	4 – Landis+Gyr's market share in China is non-existent because the local market is dominated by local producers. Moreover, for political reasons the Chinese government is used to not award contracts to foreign companies. However, the Chinese market will be in the future the largest market by number of installed smart meters.
Opportunities	**Threats**
1 – Developed countries are putting in place several roll-out programs (such as the European Union plan to reach 72% penetration in 2022). Due to the strong presence in advanced markets (EMEA and Americas) Landis+Gyr could become one of the key players in the substitution of old smart meters.	1 – Increase in competition from low-cost providers (especially Chinese ones) and from companies with superior know-how in communication technologies and cybersecurity (such Cisco and Google).
2 – The market is currently shifting towards Internet of Things (IoT) and big data-based meters. Thanks to a particular focus on R&D (75% of R&D expenses is related to software development), Landis+Gyr could become the leading company in advanced analytics applied to smart meters.	2 – Strong appreciation of the USD against currencies of countries in which Landis+Gyr has operations.
3 – Landis+Gyr could intercept a large part of the growth of the smart meters' industry in APAC. Despite the Asian market is dominated by Chinese and Japanese producers, Landis+Gyr could exploit integrable technologies to strengthen its position and boost revenues.	3 – Change in regulations could lead to require new meters' specifics. Landis+Gyr could be obliged to spend a considerable amount of money and time to comply with them.
4 – Emerging markets in Latin America (especially Brazil and Mexico) will become in the foreseeable future the largest markets for smart meters in the American continent (behind the US). Both Governments of Brazil and Mexico have announced investments of billion USD to improve local smart grid infrastructures and to reduce technical and non-technical losses.	4 – Termination or delay of a contract.
	5 – Security threats. Landis+Gyr could be subject to several cyberattacks.

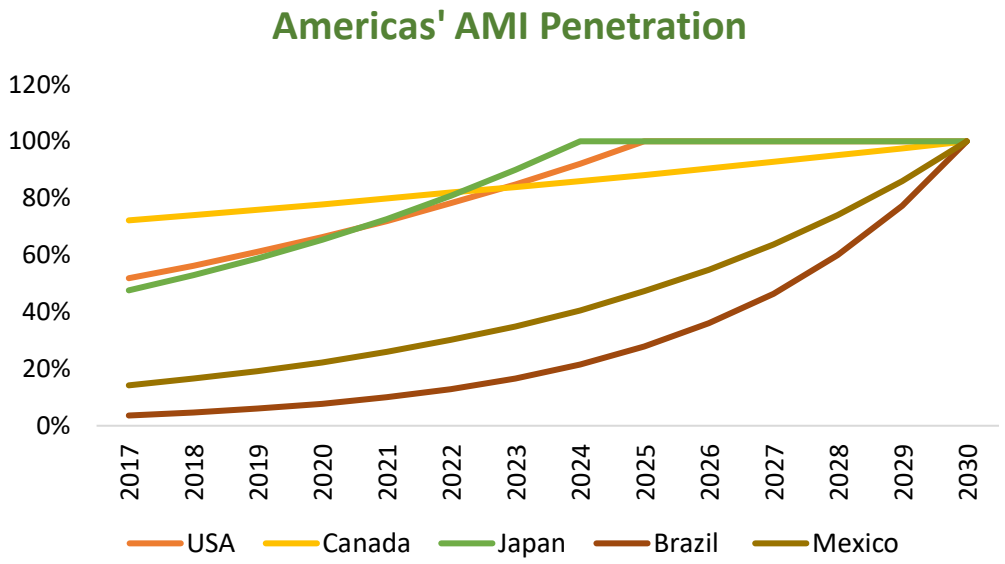
Source: estimates

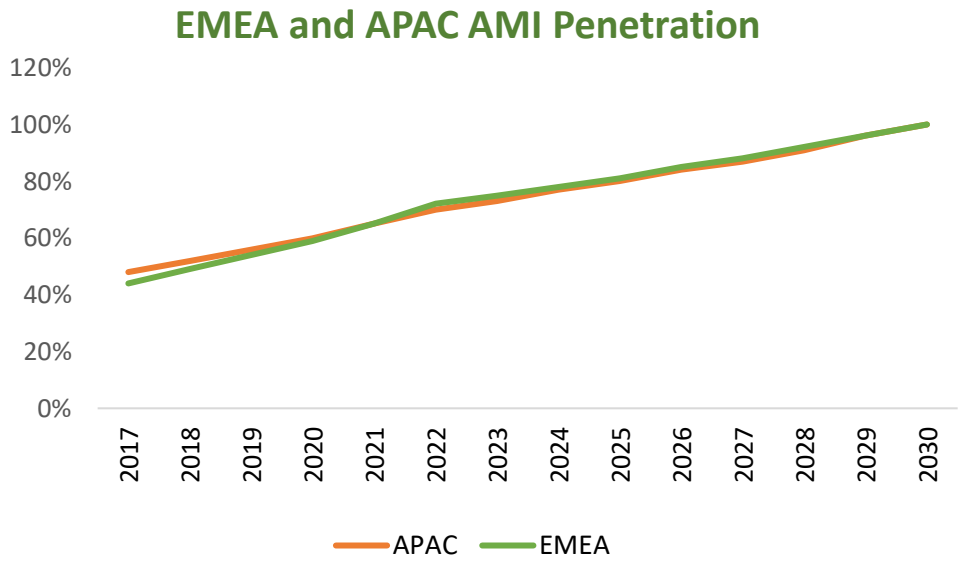
App. 16. Landis+Gyr EBITDA forecasts breakdown



Source: estimates

App. 17. Landis+Gyr' SM penetration path





Source: estimates

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RESUME

Founded in 1905 by Richard Theiler as an electrotechnical institute, Landis+Gyr AG (L+G) went public in 2017 and is a pure-play, leading global provider of smart metering hardware, software and smart grid solutions.

Following this paper, the investment recommendation on Landis+Gyr (L+G) is a BUY, with a target price of CHF77, an upside potential of 24% on the closing share price (CHF 62.05) of November 30th 2018. Valuation stems from sustained end-market growth in key regional segments, Landis+Gyr consolidated market presence in EMEA and Americas segments and R&D leadership coupled with reputational advantages. Globally, due to varying degrees of regulatory pressures, markets are moving at different rates towards a complete adoption of smart metering technology. This will lead to a sustained growth in AMI technology, especially on the software rather than the hardware side, favoring L+G's top-line growth, driven by multiple factors: the exodus of the global economy towards renewable energy resources requiring a developed smart grid, the first-wave mass deployments of AMI in developed markets and the end of first-wave deployments in EMEA and North America and the beginning of replacement cycles following smart meter planned obsolescence. The end-market is essentially characterized by state-owned utilities, with a (slowly) growing focus on energy retailers. The projected expansion of the Internet of Things (IoT), the emergence of renewable energy resources, end-user's desire to better manage energy usage and produce cost savings, create potential for sustained future sales growth from the sheer momentum of end-user needs.

With a leading market positions (38% of total US market, 19% EMEA behind Sagemcom) and established relationships with key partners, Landis+Gyr stands in a favorable position to benefit from continued deployment of AMI and from subsequent replacement cycles. This position is a result of significant R&D efforts (~10% of annual net sales), its pure-play position with respects to competitors (often widespread, unfocused conglomerates), and a modern, continuously renovated solution stack appreciated by its customers. L+G's market position is consolidated by high barriers to entry, including regulatory burdens, the need for continuous R&D investments to add value to the existing solution stack, and longstanding relationships with key partners**.** Currently restructuring its ailed EMEA supply chain and cost-base, it is common belief that EMEA and USA will be key to Landis+Gyr mid-term success.

Contracts with utilities are typically long-term, engendering 10-20 year engagements: fostering and solidifying relationships with key customers is imperative in the smart metering business. The commitment to delivering high-quality, reliable products is evident in the numerous awards Landis+Gyr has won: Frost & Sullivan's "Company of the year" in 4 out of the last 5 editions. In APAC, where Landis+Gyr seeks to garner market share, it recently underwent a business victory: Vietnam Electricity (EVN) won an award for the most innovative digital project using Landis+Gyr technology and expertise. The project consisted of re-organizing Vietnam's energy data management. An EVN spokesman deemed Landis+Gyr's cooperation as "enthusiastic", "cooperative" and "very receptive", potentially increasing the probability of future projects in APAC**.** In an industry where continuous development is key in creating an edge over competition, Landis+Gyr invests over USD 160 mln in its software solution stack. R&D investments are almost double peer's average of ~5%. Developing and marketing two general releases of software per year to its solution stack, Landis+Gyr keeps customers up-to-date in real-time.

Landis+Gyr is a smart-metering and grid-networking firm headquartered in Zug, Switzerland. Landis+Gyr develops and sells meters and related software to over 3,500 electricity, gas and water utilities worldwide. Prior to its IPO on the SIX Swiss Exchange in July 2017, Landis+Gyr went through a series of different investors and owners, remaining private. The company owns and leases manufacturing and R&D facilities in Switzerland, the UK, North America, South America and India. Currently, Landis+Gyr is undergoing a business transition from internal hardware production to outsourcing: key partners in component and sub-assemblies include Foxconn Technology Group, Jabil Circuit Inc., Celestica Inc., Flextronics and Sanmina Corporation. As of Q1 in FY17, Landis+Gyr employed 5,566 worldwide.

Landis+Gyr primarily serves public and privately-owned utilities but is expanding to include energy retailers in its end-market base. The company is organized in 3 business segments: most of the revenue (72%) is generated by connected intelligence devices, smart meters that provide utilities with information about their grid; software & services accounts for 16%, which includes IT-grade software and analytics both for the end-user or managed by Landis+Gyr; and 12% are standalone devices, or meters with one-way connectivity. The US market is Landis+Gyr's largest geographical segment, accounting for 56.1% of total revenues: Japan is reported within this geographical segment. EMEA follows with 35.4%, and APAC with 8.4%.

L+G derives its market success from supplying an end-to-end solution stack**:** this includes the smart meter, the communications network and the software stack the utility runs, along with after sales services and maintenance. It offers tailored hardware solution suits for its clientele, along with a range of services, software and training modules for its products. The bulk of Landis+Gyr offering, smart meters, with over 80 million units deployed worldwide, can be categorized into dynamic load management (help utilities monitor, measure and control aggregate demand loads); electricity/gas meters (to measure and monitor electricity/gas usage); distribution automation (adds intelligence and two-way communications to devices across the grid) and battery energy storage solutions (flexible, robust storage of energy (i.e. for renewable energy generation)). Landis+Gyr package includes smart metering and smart grid enterprise software and analytics. Managed service solutions range from fully hosted services to tailored solutions: these include product supply, advanced metering infrastructure network planning, project deployment management, and installation, operation and maintenance of hosted software and field deployed equipment. A small (and shrinking, being replaced by smart meters) fraction of the offering includes standalone meters, those that simply provide utilities with remote readings.

Landis+Gyr has a regional dependency on key customers. Primarily, these are utility companies: TEPCO (Japan) and Salt River Project and Power District (USA) in Americas; British Gas Ltd. (UK), Enedis S.A. (France), Alliander N.V and Stedin Netbeheer B.V. (Netherlands) in EMEA; China Light & Power (Hong Kong) and Meralco (Philippines) in APAC. Other customers include energy retailers like Origin (Australia). The adoption of a group-wide zero-defect initiative implemented by each region, along with certain aspects of "six-sigma" and "lean" management for quality assurance, has solidified L+G's reputation and has allowed the company to institute long-term relationships with its clientele. Landis+Gyr has a long list of suppliers, and COGS represent 70% of expenses.

Landis+Gyr highlights its intention to continue its commitment to innovation through R&D in the optic of enhancing their portfolio of products, solutions and services. FY17 R&D totaled $ 160 mln (9% of total revenues), and Landis+Gyr expects to maintain these contributions for innovation, focusing on the connectivity, communication and security of products. The company plans to leverage their leading position in AMIs and smart-grid solutions in key markets characterized by attractive regulatory frameworks, sophisticated tech requirements and large sales potential. Growth potential comes primarily from APAC (30% annual CAGR between 2017-2021), where AMI infrastructure is underdeveloped (apart from Australia and New Zealand) and large deployments are

expected. L+G plans to pursue operational excellence programs: these are internal restructuring programs to streamline operations. Project Phoenix in EMEA aims at reducing the cost base, with target savings of $ 20 mln per annum (full savings expected to be generated by Q1 2019). Project Lightfoot aims at bundling and partially outsourcing certain activities to enhance production efficiencies, with target savings of $ 25 mln per annum (full savings expected to be generated by Q1 2022). Landis+Gyr plans to continue integrating strategic targets via acquisitions, in adjacent segments, such as smart-water, as well as complementary technologies. In May 2018, Landis+Gyr acquired Acumen from Origin, Australia's largest energy retailer, in a joint venture with Pacific Equity Partners. The deal is expected to engender volumes of 800,000 meters delivered to entities in Australia and New Zealand, amounting to $90m in sales. Australia is one of the most developed markets in terms of smart infrastructure, with a potential rollout of 8 million units throughout the country. This strategic move is deemed pivotal in reinvigorating the APAC segment and exploit APAC's growth potential (a move reinforced by the recent change in APAC regional management), garnering reputation for potential future deals.

The smart metering market is expected to grow at an annual CAGR of 8.9% in volume between 2018 and 2025, reaching a global market value of $7.1bn (*source: Global Data PLC*). Landis+Gyr highlights three key drivers to the smart metering industry: decarbonization, decentralization, and digitalization. Government mandated AMI rollout programs will drive substantial smart metering demand as countries upgrade their smart metering infrastructure**.**

Energy generation and consumption currently account for two-thirds of global greenhouse gas emissions: both the public and private sector are emphasizing efforts to reduce the power generation industry's carbon footprint, a trend shared by the global community as a whole. Efforts against carbon dependence inevitably spur the growth of renewable energy which necessitates a flexible and reliable power grid since it is impacted by weather conditions and does not provide constant power supply. The advent of renewable resources will be a major driver for future smart meter and AMI sales in the future. Landis+Gyr responded to such demand in 2017 when it launched the Iron Horse Energy Storage & Solar project in Arizona for Tucson Electric Power, providing the energy storage system. TEP aims to produce 30% of its power with renewable resources by 2030, exemplifying the growing need for a smart grid**.** The growth of renewable energy resources will increase Landis+Gyr's future sales of smart metering solutions in developed economies such as the USA, it's largest market: the

total renewable energy market will garner $2,152.9bn by 2025 at 4.9% CAGR (*source: Cision PR Newswire*).

In response to the decentralization of the power generation base stemming from the adoption of renewable energy, the clientele itself, following technological advancements in energy storage and self-generation, is morphing into "prosumers", both consuming and producing energy. These trends engender additional challenges for utilities to ensure a safe grid: in the USA alone, losses linked to security breaches are estimated at $150bn per year. AMI technology facilitates the integration of decentralized grid elements engaged in localized consumption and production into the smart grid. Ensuring grid safety and preventing cyber-attacks on the network will be a key feature in Landis+Gyr's software solutions and product offering.

McKinsey forecasts a growth in economic impact of IoT from $3.9 trillion in 2015 to $11.1 trillion by 2025, with a total base of over 30bn installed endpoints. Utilities follow this trend, seeking to better manage their networks, planning and investments following their business cycles. Landis+Gyr best market opportunities thus lie in the provision of adequate software to allow utilities to manage and streamline their energy flow. R&D expenditure is thus an important metric in judging a firm's efforts towards improvement: Landis+Gyr steadily invests double the industry average of about 5%. Software offering is seen to be the best source of value-added for end-users, and what can differentiate Landis+Gyr's solution stack to that of competitors.

Utilities are subject to regulatory pressures from their respective governmental entities. This leads to substantial differences in regional AMI adoption and future sales projections. Government mandated AMI rollout programs are set to drive substantial smart metering demand, as countries upgrade their smart infrastructure and switch to green energy. These include mandates for second wave rollouts, with meter replacement cycles every 10-20 years depending on the geographic segment. This creates a certain degree of dependence on replacement cycles, and regulations that postpone these directly affect revenues. Countries also develop their own technical requirements to which utility companies must adhere to: for example, the ANSI code in the USA has different specs for physical meters to ESO in the EU. These challenges directly affect smart metering companies since they must provide customized solution stacks per region. Governmental legislation can either hinder (like the slow take-up of the "Power of Choice" legislation in Australia) or help (EU "Third Energy Package" 80% AMI penetration requirement for adhering member states) Landis+Gyr's top-line growth prospects.

Landis+Gyr is one of the main players in the smart meter market, with total generated revenues of $1,574bn in 2017, up by 16% in constant currency from the previous year. This market presents a globally low level of concentration: Landis+Gyr dominates the market, with an 18% market share, while most competitors hovering under the 10% threshold. Entry barriers are high due to significant investment requirements in R&D; legal specs required by regulatory authorities; important (although generally diminishing) switching costs; and the strength of relationships of established players with key customers. Competition is elevated: Landis+Gyr is one of the market-leaders in EMEA and the Americas, a result of its reputation and its ability to supply the best metering solution stack.

In 2017, Landis+Gyr's largest ten customers accounted for more than 30% of its revenues, but no single customer represented more than 10% of the total revenues. Even though the customer base is fragmented, each single customer can delay or terminate a contract for any reason, adding volatility to Landis+Gyr's revenue stream. In addition, utilities are price-makers since they often operate as government sponsored monopolies or in oligopolistic markets. For these reasons, buyer bargaining power is moderate-high. Landis+Gyr also depends on a few, large key suppliers that deliver mission-critical components. The top five suppliers accounted for 59% of material expenses in 2017, while the largest, Foxconn, accounted for 32%. As a result, supplier bargaining power is high.

Landis+Gyr has a market share of 38% in North America and of 44% in South America. In both regions it is the largest company ahead of (primarily) American competitors. Landis+Gyr is thus well positioned to capture a large part of the growth stemming from meter deployments in Latin America (CAGR of 40% from 2017 to 2021) as well as from rollout programs in North America and in Europe. In APAC, competitive pressures (Herfindahl-Hirschman index equals 816, indicating an unconcentrated industry) from Japanese producers squeeze Landis+Gyr's market share to a mere 5%. With respects to growth, historically Landis+Gyr has focused its strategy on developed markets. However, in the foreseeable future, most growth opportunities will come from APAC (CAGR 30% from 2017 to 2021) and South America. Despite an unfavorable competitive environment in APAC, Landis+Gyr is striving to capture part of the growth offered by APAC through targeted acquisitions (Acumen in Australia), a growing reputation and a change in the regional management team.

Landis+Gyr has historically invested a large part of its revenues in R&D. In 2017, the company's R&D to sales ratio amounted to 9.43%, substantially higher than the industry average. Many competitors are conglomerates and do not specialize in smart meters, thereby Landis+Gyr is expected

to continue outperforming competitors with respects to this metric. Landis+Gyr manages R&D in a decentralized way with 4 global centers that focus on new technologies and a network of 20 dedicated engineering offices specialized in providing solutions according to local regulations. The company is focusing its efforts on continuously improving its software offering, to which it dedicates 74% of its total R&D expenses. The remaining part (26%) is allocated to hardware. This continuous effort in developing new software and advanced analytics programs comprises Landis+Gyr's competitive edge, solidifying its position in developed market segments.

+G reported an annual revenue growth of 4.73% for FY17 amounting to total revenues of USD 1.738 bln. Since FY14, the company averaged a CAGR of 3.25%. Regarding revenue growth, the company tends to underperform the industry (7.74%), but outperforms in terms of CAGR (2.10%) for the same period. L+G structures its business in three segments: Connected Intelligent Devices (72% of net revenues in FY17), Software and Services (16%) and Standalone Devices (12%): digitalization is driving a shift in the offering from standalone devices to smart devices coupled with the software solution stack. Regional sales growth (EMEA, APAC, Americans) forecasted by triangulating regional CAGRs, expected smart meter penetration rate per country per region and expected rollout programs mandated by regulation. Estimated CAGR per region from 2017 to 2022 using forecasts provided by L+G, governmental entities and industry reports. From demographic data on total population per country per segment, it has been deduced the percentage of households with smart meters (SM), from which it was predicted, using regional data on current market penetration, the demand and sales of SM up to 2030. A constant market share per year has been adopted for Landis+Gyr and forecasted the percentage of sales. The constant market share assumption makes sense in light of fragmented and intensifying competitive landscape; persistent regulatory pressures; and a high saturation of the SM market in advanced economies. Revenues expected to grow at a rate of 6.75% for FY18 since L+G finds itself in the concluding phase of installation of SM in advanced economies. By 2020, growth is expected to pick up - with YoY sales growth of 18.84% - due to initiating replacement programs in saturated markets such as Italy and Finland (100% penetration rate), whose SMs are coming to the end of their planned obsolescence of 10-15 years, and the beginning of first-wave deployment in emerging markets in South America. While EMEA and APAC regions YoY sales growth will tend to remain stable at around 6.81% and 12.05%, US sales will experience volatility stemming from the regulatory influence on replacement cycles, possibly causing disruptions in planned deployments.

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In 2017 COGS represented 70.65% of operating costs: COGS are composed of direct labor costs and production costs (i.e. raw materials, components and sub-assemblies). The rest of the operating expenses are SG&A (15.12%) and R&D (9.43%). During FY17 Landis+Gyr suffered from a series of non-recurrent costs which increased costs of revenue by 9%. These were a series of failures regarding operational initiatives, costs related to restructuring programs, patent protection and regulatory issues, along with costs related to the IPO. The firm is undergoing a change in cost structure intended to optimize its cost-base by decreasing operating expenses and maximizing manufacturing efficiency. In 2017 L+G started an outsourcing program planned until 2022 driven by an increase in competition which negatively impacts the profitability of the overall industry. In

response, the company has decided to act on its costs: in the short term, outsourcing were expected to decrease SG&A expenses but increase the COGS more-than-proportionately: the benefits of outsourcing will be reaped once the company has established a reliable network of suppliers. As a result, between FY17 and FY22, it was estimated annual growth in COGS of 200 bps, an annual decrease of 100 bps in SG&A and an annual decrease in CAPEX of 50 bps, resulting in a compression of the EBITDA margin and stabilize around 7.3% from 2021.

Landis+Gyr is undergoing a change of structure allowing the firm to run a debt-light business. A commitment to low debt levels improves Landis+Gyr's financial flexibility with respect to its peers. The company has repaid its shareholder loan (with Toshiba) entirely in FY17. It disposes of a credit facility agreement contract (CFA) with UBS, drafted in the same year for an amount of $240m of which it has currently drawn-down $130m. The company thus has to pay a fee that amounts to 35% of the applicable margin on the undrawn amount, plus interests on the used amount (accounted for the interest expense item in the income statement). The deleverage process implies the payment of a constant yearly amount (principal + interests) until 2022. At the end of FY21, the balance of the debt will be zero, leaving only a small portion of debt and current portion of the shareholder loan.

The deleverage process led the company to partially offset IPO costs in FY17 by decreasing interest expenses (-37.7% in FY17), consequently improving its operating cash flow (+31.1%). The operating cash-flow is forecasted to be sufficiently positive to cover all requirements in working capital, CAPEX, debt services and dividend payments. The cash flow from investing and financing are both decreasing: the former due to a decrease in Capex (assumed a yearly decrease of 50 bps) due to Landis+Gyr's "capital-light" outsourcing business model; the latter due to debt repayments and the switch to a CFA. Changes in cash are expected to be primarily driven by sales generation in the future. Being highly cyclical due to the unpredictable, regulatory-based nature of rollouts and differing regional penetration rates, this will result in fluctuating but positive FCF and their respective margins. Even though cash-wise Landis+Gyr lags behind competitors, their liquidity position will improve by 2022 as a result of increasing account receivables which characterize L+G's "capital-light" business model.

Landis+Gyr's net working capital (NWC) historically matched sales growth. Consequently, following the evolution of sales, NWC will increase until 2021, to then decrease in 2022 from $436m to $399.2m. Efficiency will improve in terms of asset turnover, up from 0.7 in FY17 to 1.0 by FY22.

Regarding the operating cycle, it was assumed to be constant in the foreseeable future at an amount of 67.4 days. A slight decrease in the average inventory days (from 38.9 in FY18 to 38.5 in FY22) compensates the downward movement of the average days in accounts payable (from 51.8 in FY18 to 51.2 in FY22). Landis+Gyr outperforms competitors in its operating cycle (57 days in 2016 and 56.7 days in 2017): this decrease is a positive sign, taking into account that most of the customers are utilities that have significant bargaining power. The days in inventory and the days of sales outstanding are the lowest among all peers. At the moment, the asset turnover is slightly below the average of the industry but, as previously mentioned, this is expected to improve. Regarding the solvency, the low amount of interest-bearing debt makes L+G one of the most financially solid companies, coming to the conclusion that the probability of a financial distress situation is significantly low.

BUY recommendation with a 5-yr upside potential of 24% on the share price of November 30th 2018 (CHF62.05). Target price (CHF77) has been computed using a hybrid DCF and multiple analysis. The decision to weight the multiple analysis 10% was due to it lacks in forward-looking as it is based on trailing-EBITDA, and that Landis+Gyr's current situation, especially in terms of profitability, is transitory. Moreover, there exists a lack of pure-play comparable firms.

High growth is expected in both the short and long run due to second wave roll-out programs in advanced economies and to new installations in emerging markets. Landis+Gyr's revenues will grow by 5% in 2018 and 2019 and by 7% in 2020, in line with management's expectations of a growth rate between 3-6%. In the short run, Landis+Gyr's largest sources of revenues will emerge from Japan, which is currently undergoing mass replacement of its standalone meters with AMIs, and the US, which aims to increase its current relatively low penetration (60% of households possess a smart meter as of 2018).

Developed countries will finish roll-out programs and will reach maximum penetration by 2022 with a CAGR of 36%. Landis+Gyr's revenues will amount to $2.72bn in 2021 (+17% from previous year) resulting from top-line sales growth in EMEA and US. It is expected a drop in revenues to $2.4bn (-8%) resulting from the achievement of full deployment in developed markets (replacements will gradually pick-up). The Americas segment will account for 55% of total revenues in 2022: a slowdown of that segment will impact L+G's operations. Furthermore, European countries will reach

full deployment of AMIs around the same period as US. After 2022, growth in advanced economies will be driven primarily by mandated replacement cycles, which are uncertain in their timing.

In emerging markets expansion will be ongoing and new installations will reach a considerable level by 2023. Landis+Gyr will be able to more than double its revenues by 2030. According to the forecasts, the market in emerging economies will grow at CAGR of 23% between 2024 and 2030. Growth opportunities in this segment will more than compensate regional declines in EMEA and US (revenues from emerging markets will pass from 15% of total revenues in 2018 to 64% in 2030). These assumptions depend on government policy making in changing regulations, delaying or terminating new installations and replacement cycles. Since smart meters are central in utility business models, it is deemed the likelihood of significant impact of negative regulatory burden to be low.

WACC of 6.52% has been used to discount FCFs. The cost of equity was computed using the following elements: the rate on 10-years US Treasury Bond (3.05%) as the risk-free rate, the S&P500 as the market portfolio, a beta of 0.72 calculated from the average between the regression of Landis+Gyr competitors with respect to the S&500 (5-year time horizon) and the industry beta ("electrical equipment") alongside the beta estimated by Thomson Reuters and Yahoo Finance. US risk-free and US market portfolio because Landis+Gyr has more than half of its business in the United States. Applying CAPM yielded a cost of equity of 7.12%. The cost of debt was computed by adding a spread to the risk-free rate. The spread on the risk-free rate has been found using the interest coverage ratio (ICR) method, resulting in a 0.56% spread following Landis+Gyr's high credit rating (AAA). Hence, cost of debt resulted 3.6%. Taking in consideration the risk-free rate, a cost of debt of 3.6% highlights that the company has a low level of debt and it is almost default-free, which is the case in practice. In the WACC computation, the weights of debt and of equity were respectively 13% and 87%: as a tax rate it has been used an average of all tax rates that L+G must pay (25.2%). This yielded as estimated WACC of 6.52%.

The terminal growth was computed as a weighted average of the long- term GDP growth of the main countries in which Landis+Gyr operates in and the ratio of revenues of the geographic segments on total revenues. Nominal growth rates have been used because, in our analysis, cash flows are nominal. The computation gave a result of 2.51%. This level of long-term growth rate reflects not only the mass deployments in emerging markets (especially South America and APAC), but also future

replacement cycles in advanced economies (North America and EMEA) due to smart meter obsolescence. A terminal growth rate of 2.51% reflects also the benefits of current R&D efforts reaped in the future.

WACC and growth rate estimates were being crucial in the valuation: in a pessimistic scenario with a WACC of 6.9% and a terminal growth of 2.1%, the share price resulted CHF66.7 which corresponded to an upside potential of 7.5%. In a very optimistic one (WACC of 6% and growth of 2.8%), share price was CHF102.2 which corresponded to an upside potential of 64%. It is interesting to note that for both combinations of WACC and terminal growth the potential is positive, probably indicating that Landis+Gyr is currently undervalued by the market.

Taking into account competitors, the multiple analysis showed that the company is overvalued. In order to assess the share price, the common EV/EBITDA multiple was the best approach since Landis+Gyr had a high proportion of intangibles (68.3% of total assets in FY2017) and this allowed to compare companies with different capital structures. A traditional approach would have been considering P/E or PEG. However, Landis+Gyr suffered a net loss in 2017 and 2016 respectively of $62.6 million and $13.7 million due to transitory supply chain issues in EMEA and slow time-to-adoption of favorable regulations in APAC. An EV/EBITDA multiple better reflected the economic reality. From the multiple analysis, share price of CHF43.5 was found. The result is that the market attributed too much significance to temporary issues in gross profit generation and a resulting weakening EBITDA margin due to transitory supply-chain issues and was under-weighting the future effect of current strategic decisions in EMEA (cost-cutting) and APAC (targeted expansion). As comparables, there were used companies with at least 4% of market share in a certain region. Many of Landis+Gyr's competitors are conglomerates (Hubbell, Honeywell, Toshiba) and only have a fraction of their business in the meters' industry, with little or no pure-play competitors. The multiple analysis has been decided to be weighted only 10%.

Landis+Gyr, headquartered in Zug, Switzerland, is composed of the parent company (Landis+Gyr Group AG) whose sole shareholding is in L+G AG; the latter directly or indirectly owns 12 foreign subsidiaries, all regional operational centers for the company (in Australia, Brazil, China, Finland, Great Britain, Germany, Greece, India, Mexico, the Netherlands, South Africa, Switzerland and the USA).

Landis+Gyr's group executive management is composed of the CEO (Richard Mora), the CFO (Jonathan Elmer) and the executive vice-presidents and heads of USA (Prasanna Venkatesan) and EMEA (Suzanne Seitz). Suzanne Seitz took-over as head of a waning EMEA region on November 19th, 2019, previously senior VP of Europe Zone North in Siemens Building Technologies. With her 20+ years in European business and her success stories in implementing profitable growth strategies, her appointment will help reinvigorate EMEA's mid-term prospects. Landis+Gyr's board of directors is currently composed of 8 non-executive members, including the chairman, Andreas Umbach. Five members were re-elected at the assembly on June 18t, whilst three are newly-appointed. Six of the board members, including the chairman, have academic and professional experience in management, law and economics, while only two have technical engineering competencies. two board members are women. Concerns may arise about board independence: Andreas Umbach, chairman, served as the Group's CEO/COO between 2002 and 2017, whilst Andreas Spreiter, chairman of the audit and finance committee and independent member, served as Group's CFO between 2002 and 2012. The presence of the old CEO as chairman is potentially troublesome. A second issue is the potential for a busy-board: 5 members hold at least one other board seat, and the chairman of the board is chairman of two other boards somewhere else. This could signify board members are not devoting enough time supervising management and guiding the company. Board remuneration is fixed and contains no variable component; from being paid entirely in cash in FY17, the pay structure in FY18 will change to 65% cash, 35% restricted stock. Shareholders have the right to "say-on-pay": aggregate compensation for the BoD and GEM remained fixed during FY17 (CHF2m and CHF12.5m respectively). The GEM remuneration is subject to a fixed leg and variable leg, divided into a short-term and long-term incentive plan (based on KPIs related to company performance). Landis+Gyr justifies this compensation scheme as putting emphasis on profitable growth, fostering long-term value creation and aligning managerial interests with shareholders' ones.

Landis+Gyr is committed to sustainable development; the company's business proposition itself is to help consumers manage their energy usage better. The Group holds ISO 9001 (quality management), ISO 14001 (environmental management) and ISO 14001 (occupational health and safety assessment); externally, Landis+Gyr requires tier-one suppliers to sign the Landis+Gyr code of conduct or to provide evidence of equivalent codes of conduct, holding suppliers to rigid environmental, health and safety and quality standards. The Group newly introduced a sustainability committee in FY17, entrusted with identifying current and future CSR goals. Landis+Gyr is committed to a continuous

employee training program in areas such as health and safety, cultural and environmental awareness, amongst others.

The company currently has 29,510,000 shares outstanding grouped under a single class of voting shares. Since its IPO in July 2017, L+G has not had any further stock or preferred stock issuances. The largest position is held by Kirkbi AG (15%), a Danish holding and investment company of the Kirk Kristiansen family; originally holding a 5% stake in February 2018, the participation was gradually augmented to 10.52% in June 2018. They purchased the second tranche in a period where Landis+Gyr stock was weakening: should they remain true to their strategy, recent negative trends in the stock price could entail a further expansion in their share package.