

2G Energy

CHP taken to the next level

2G Energy is the third largest provider of gas driven CHP (combined heat power) plants in Germany. It has diversified its activities so that it is less exposed to changes in the regulatory environment for renewables and CHP in Germany through expanding export markets and service revenues. Gas powered systems are becoming increasingly important as sources of power when output from solar and wind systems is low. The stock represents a low-risk play on the shift to decentralised, decarbonised modes of power generation.

Supportive regulatory environment in FY16

Sales rose by 14% year-on-year to €174.3m during FY16. Sales of biogas systems within Germany accounted for a significant proportion of this increase, supported by a change in the legislative environment that promoted more flexible systems able to balance fluctuating output from wind and solar generation. Exports grew in FY16 by 28% year-on-year to 30% of total sales. Service revenues increased by 10% year-on-year to 33% of total sales, providing a useful buffer against fluctuations in demand for CHP plants. EBIT margin development was held back (3.2% vs 3.1%) as a result of higher than expected costs associated with individual major projects and spikes in production. The profit before tax result includes a €1.8m provision for unresolved tax issues.

Good start to FY17

During Q117 new order intake doubled to €29.4m, resulting in an order book totalling €111.1m at end April compared with €88.0m a year previously. Around half of the order book relates to exports. The strong order book and sustained Service revenues support management guidance of €160-180m revenues during FY17. Since management has taken steps to address costs, management's guidance of 3-5% EBIT margin appears reasonable.

Valuation: Trading in line with peers

A comparison against established boiler manufacturers shows 2G Energy trading at a discount to the mean for the sample with respect to EV/sales multiples (0.5x vs 1.0x year 1 mean), in line with EV/EBITDA multiples (8.0x vs 8.3x year 1 mean), at a premium to year 1 P/E ratios (18.1x vs 14.1x mean) and in line with year 2 P/E multiples (13.9x vs 13.9x mean). This indicates that the shares are fairly priced at current levels with potential for uplift as margins improve.

Consensus estimates

Year end	Revenue (€m)	PBT (€m)	EPS (€)	DPS (€)	P/E (x)	Yield (%)
12/15	152.9	4.6	0.59	0.37	39.4	1.7
12/16	174.3	3.6	0.40	0.40	55.6	1.8
12/17e	180.0	8.0	1.23	0.40	18.1	1.8
12/18e	190.7	10.5	1.60	0.42	13.9	1.9

Source: 2G Energy data, Bloomberg

Alternative energy

12 June 2017

Price **€22.24**
Market cap **€99m**

Share price graph



Share details

Code 2GB
Listing Deutsche Börse Scale
Shares in issue 4.4m
Last reported net cash at 31 December 2016 €3.9m

Business description

2G Energy is a leading international manufacturer of highly efficient combined heat and power plants. These are deployed in the housing industry, agriculture, commercial and industrial companies, public energy utilities and municipal and local government authorities.

Bull

- Decentralised CHP solutions reduce CO₂ emissions by improving conversion efficiency.
- Remote control capability improves service margins and supports flexibilisation.
- Remote control capability aids integration into virtual power plants.

Bear

- Uptake affected by green regulation.
- Economics depends on spark spread.
- Low free-float (47.7%).

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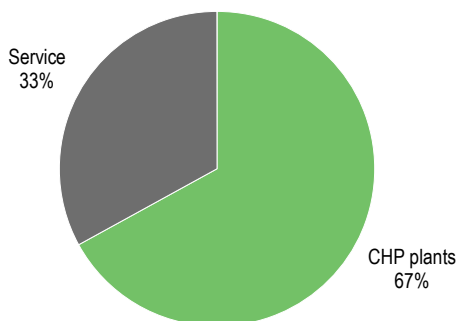
Company description: CHP systems

2G Energy is the third largest provider of decentralised energy supply systems based on gas driven CHP plants in Germany. These are deployed in the housing industry, agriculture, commercial and industrial companies, public energy utilities and municipal and local government authorities. The group provides complete solutions for customers: development, planning, production, commissioning, digital network integration and service. More than 4,000 of its CHP plants are in use in nearly 40 countries.

2G's CHP systems range from 50kW to 2,000kW of electrical power output, so are the right scale for decentralised power generation. They are fuelled by biogas, natural gas, other lean gases and hydrogen, making them suitable for deployment both in regions where biogas use is encouraged through application of subsidies and those where gas (either natural gas or biogas) offers an economic source of energy to balance the fluctuating output from renewables. The most significant differentiators are high electrical and thermal efficiency, long maintenance intervals and grid integration capability. Integration capability and flexibility of operation is key to deploying 2G's systems together with renewable energy sources as part of virtual power plants (VPPs).

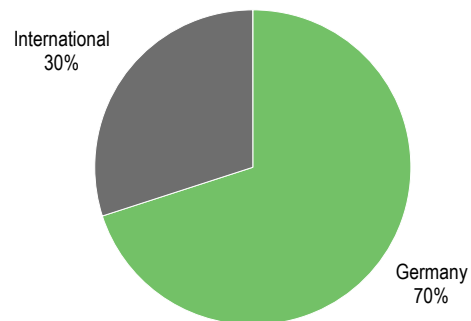
2G Energy was founded in 1995 and listed on the German Stock Exchange in 2007. Its headquarters are in Heek, Germany, where its production, R&D and main service units are based, with sales offices in Berlin, Hamburg, Halle and near Munich. It has operating subsidiaries in France, Italy, Poland, Spain, the UK and the US. It employs over 600 people.

Exhibit 1: Revenues by segment FY16



Source: 2G Energy data

Exhibit 2: Revenues by geography FY16



Source: 2G Energy data

Business description

2G Energy designs and manufactures CHP generators that convert the chemical energy stored in gas into electrical and heat energy (which can also be used for cooling). The generators can run off different types of gas including biogas produced from fermenting organic matter like farm waste, gas generated from sewage, gas emitted from landfill sites, syngas from controlled combustion of consumer waste, natural gas and hydrogen. Its generators are available in a broad range of output capacities making them appropriate for multiple sectors. Generators are provided as part of a complete solution for customers that includes financing, planning, integration and service.

Exhibit 3: Product portfolio

Product range	Power range	Fuel type	Comments
g-box	20-50kW	Natural gas	Standard module. Commercial buildings and residential complexes. Sold direct and via OEMs
filius	50-150kW	Biogas	Compact design for smaller biogas plants
patruus*	100-400kW	Natural gas/biogas	High plant availability
agenitor	220-450kW	Natural gas/biogas	Optimised gas motor for higher efficiency
avus	500-2,000kW	Natural gas/biogas	Industrial projects and heat grids

Source: 2G Energy. Note: *To be replaced with aura low NOx product line from 2018 onwards.

R&D delivers high efficiency, durability and availability

A key source of its competitive advantage is the relatively high electrical and thermal efficiency, durability and availability of 2G's CHP generators (the ability to integrate systems into the grid is also important and is discussed later). This arises because although 2G uses standard engine blocks, it complements these with motor components and CHP peripherals it has designed in-house to create fully integrated systems. For example, the Agenitor, Avus and Filius models deploy four-valve technology, which gives a highly efficient gas exchange in the main combustion chamber and steel pistons, which significantly reduces friction and heat losses. It has designed its own longer-life spark plugs, which mean that the generators do not need to be powered down to replace worn plugs so frequently. 2G has recently introduced a gas mixing system to support continuous operation of CHP plants with different gas types, for example combining varying amounts of sewage gas with natural gas, thus eliminating switchover time and improving operating efficiency. Recent development work has included a new outdoor acoustic capsule that reduces the footprint by around 15% compared with standard container solutions and has pre-assembled connections, thus enabling reduced commissioning time.

Service and maintenance offer supported by innovative software

As 2G's installed base of CHP plants increases (currently over 4,000), an increasing proportion of group sales are attributable to service revenues. 2G provides a 24-hour service hotline to help customers minimise equipment outages. The effectiveness of this operation, and consequently margins, is boosted by fitting new CHP generators (as well as those already in the field) with an automatic remote diagnosis system developed in-house. This continuously monitors all plant parameters. If a technical irregularity occurs, an alert is automatically sent in real time to the 2G Service Centre at the headquarters in Heek. The software then generates a proposed solution based on the plant parameters and an employee at the closest 2G Service Centre will immediately take appropriate measures for the plant to continue operating. The algorithms also provide a preventative maintenance framework, reducing the likelihood of disruption to the power output and helping 2G operate its teams of servicing engineers more efficiently. This software therefore provides a mechanism for improving the margins of the Service business. While service contracts are not compulsory, most customers in the natural gas segment opt for contracts as these give a pre-agreed fee per hour for servicing. Service revenues help offset the seasonal pattern of product sales. In addition, since having a service contract maintains a relationship with the customer throughout the CHP's lifecycle, 2G is in a good position to provide a replacement when old plants need to be replaced. The average lifespan of a biogas CHP module is around 60,000 operating hours.

System solution expertise

Another key source of competitive advantage is the ability to control 2G's generators remotely. This makes them ideal for combining with other power generation elements to create intelligent networked energy systems, often referred to as virtual power plants (VPPs). For example, the generators can be used to provide electricity from gas when the output from a renewable source is insufficient to meet demand. At the moment natural gas is typically used to address shortfalls in supply. However 2G is involved in a project at Berlin airport that uses gas that has been generated from surplus electricity using an electrolyser. This type of development, where surplus energy from renewables is stored in the form of hydrogen in the gas grid, may become more prevalent as the proportion of renewables in the energy mix increases further. Since not all projects are able to utilise the heat generated directly, a CHP generator may be combined with a downstream ORC (Organic Rankine Cycle) plant that converts the heat to electricity. 2G commissioned a system of this type in November 2016. In another variation, a 1.8MW project for saw manufacturer Simonds International, the thermal energy is passed to a large absorption chiller, which provides the facility with cooling through the summer months and heating in the winter. These types of projects clearly

result in increased demand for project planning capability and more sophisticated software to coordinate the different energy assets.

Financing offer removes barriers to investment

In 2015 management formed 2G Rental GmbH, enabling customers to rent or lease CHP plants either directly from the group or indirectly from a third party, thus helping them to overcome investment barriers. The impact this has on the balance sheet is discussed in the Financials section. 2G is expanding its portfolio to include a pay-for-use concept for CHP systems which, management believes, makes it the only company in the sector with this offer. This is particularly helpful for customers for whom access to finance is a barrier to a project being implemented. For utility customers in Germany with systems above 50kW, this removes the issue of how to generate a satisfactory return from the asset after the subsidy period of 30,000 utilisation hours is over.

Market overview

Drivers of adoption

Only 38% of the chemical energy converted to electricity in centralised gas powered generation plants is used by consumers; the remaining 62% of energy is wasted in generation and transmission losses. In contrast, CHP systems are typically located close to the point where the energy will be consumed, so less electricity is wasted during transmission and the heat generated in the conversion process is captured for use as well. For a typical 2G installation, 42% of the chemical energy in the gas is used for electric power, 47% for heating and only 11% wasted. This relative efficiency confers economic benefits to adopters. It also places CHP systems at the centre of a shift to a decentralised, decarbonised economy. This shift is mediated by legislation intended to either promote or moderate adoption of renewable energy.

Economic considerations

For those countries where electricity is significantly more expensive than gas, use of a CHP system represents an economic alternative to purchasing electricity, especially for situations where the heat output can be used as well. Early adopters therefore included schools, hospitals, retirement homes and factories where the heat could be used for processing or space heating and hotels. The differential between the price of gas and electricity per unit of energy, the spark spread, varies from country to country. It is currently around 5x in Germany, Italy, the UK and the US, all of which are countries where 2G is active.

Decarbonisation

Since CHP systems convert gas to electricity more efficiently than centralised power plants, they reduce the amount of CO₂ emitted per kilowatt of electricity generated from natural gas. Moreover, many CHP systems are powered by gas that has been produced from the fermentation of organic waste (biogas), from landfill or sewage gases or syngas produced by combusting consumer waste. These systems are effectively carbon neutral. Looking forward, CHP systems are likely to play a valuable role in intelligent networks of energy systems, providing a source of power when the output from wind or solar sources drops. This balancing function will further the adoption of renewable power sources. Currently this is limited by the need to have expensive conventional capacity available to meet a drop in output from the renewable sources.

Decentralisation

Gas powered CHP systems are available in a range of power outputs suitable for supplying the heat and power requirements for an individual home (though 2G is not engaged in this segment), a residential complex, industrial or commercial enterprise or a community of several thousand

houses. As they are far smaller than a centralised power generation system they can be deployed close to the point at which the electricity and heat are consumed. This gives users a reliable source of heat and power that is not dependent on the electricity grid.

Decentralisation is also becoming an attractive option for utilities as it eliminates energy wasted transmitting electricity over large distances. It also means that generation capacity can be added in small increments as demand steps up, rather than having to install a centralised facility that may be underutilised for several years until demand has risen sufficiently.

Legislation

Since Germany continues to be 2G's primary market, we restrict our review to legislation affecting adoption there. Statistics from the Energy Balances Working Group note that renewable energy's share of gross electrical consumption rose only slightly during 2016, from 31.5% to 31.7% as output was depressed by unfavourable weather conditions. The German government's target is to grow renewable energy to between 40-45% share by 2025. The most important renewable energy source is wind with 44.9% share; biogas is second at 25.6%, ahead of photovoltaic at 19.6%.

Biogas

The German Renewable Energy Act came into force in April 2000. Initially, it promoted the adoption of all forms of renewable energy through the application of feed-in tariffs. Biogas production was one of the beneficiaries, with biogas systems currently delivering electricity to the equivalent of 8.4m households in Germany (source: German Biogas Association). 2G Energy was also a beneficiary, as shown by deliveries of biogas systems in Exhibit 4. However, changes to the Act mean that it has become much more selective about which CHP plants receive subsidies. In 2012 modifications to the Act required operators of new plants to use at least 60% of the heat generated. In 2014 the Act was further amended to restrict the annual construction of new systems qualifying for subsidy to 100MW. The change came into force in August that year, leading to a surge in demand before the change and a significant year-on-year reduction in CHP demand during FY15 (see Exhibit 4). This curbed investment in completely new biogas plants and led to a year-on-year reduction in 2G's revenues during FY15. The German Biogas Association estimates that around only 150 new systems totalling 14MW were installed during 2016. Given the regulatory framework, we do not expect demand for greenfield systems to pick up in 2017.

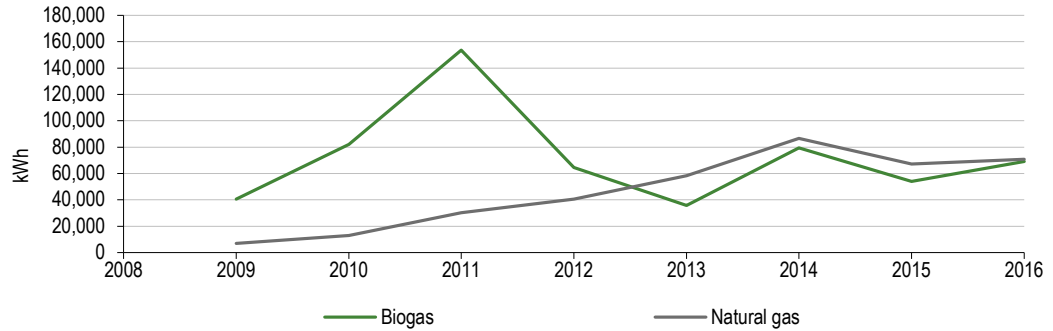
On the other hand, the 2014 amendment financially incentivises utilities operating established plants to upgrade their equipment to flexible, remote controlled systems capable of kicking in when the output from wind or solar sources stops. The German Biogas Association estimates that 142MW of replacement capacity was installed during 2016. 2G's *filius*, *patruus* and *agenitor* systems are ideal for this type of operation because of their proprietary control software, which enables them to be operated remotely, together with adjustments to the hardware to make it resilient to start-stop operation. Demand from "flexibilisation" projects resulted in 2G's revenues from deliveries of biogas systems in Germany almost doubling during 2016 to 37% of domestic system sales, contributing to the recovery in total biogas sales shown in Exhibit 4. We expect this positive trend to continue through 2017 and onwards. Additionally, the terms regulating the subsidy mean that it is financially advantageous for utilities replacing a biogas generation plant to replace it with higher output capacity equipment as this will generate the same volume of electricity over a shorter running period per year, extending the lifetime of the equipment. Based on the number of plants installed between 2006 and 2010 that are scheduled for replacement over the next couple of years, the repowering opportunity is significant. Given that 2G has a substantial installed base dating from that period (see exhibit 4) and long-standing relationships with CHP plant operators, it is well placed to benefit from the repowering opportunity.

In Europe a total of 17,358 CHP systems were installed at the end of 2015, representing an increase in installed output of 5%. This is driven by significant new installations in the UK, France,

Belgium and the Netherlands (source: European Biogas Association). A US government report issued in December 2015 estimated a potential for 11,000 biogas plants compared with 2,000 currently in place, representing a long-term opportunity for the group.

An analysis of 2G's shipments (Exhibit 4) shows that it has adjusted to the reduction in demand for new biogas plants in Germany following changes in the regulatory framework by developing export markets and systems powered by natural gas.

Exhibit 4: Analysis of CHP deliveries



Source: 2G Energy data

Natural gas

The amended German Cogeneration Act that came into force in January 2016 set targets for expanding CHP net electricity to 110TWh (19% of total production) by 2020 and 120TWh (20%) by 2025. This 120TWh corresponds to 40,000 CHP systems with an average output of 500kW. Support is to be financed through a CHP levy via grid payments. 2G reported a 12% increase in revenue from sales of natural gas systems in Germany, representing 63% of domestic CHP sales. However, growth may have been faster had demand not been held back by a lag in completing the legislation, which did not happen until October, and continued uncertainty regarding the tendering process for supply contracts above 1MW under the amended Act. It is reasonable to assume that growth in demand will accelerate once the technicalities of the tendering process have been resolved.

Management expects overseas CHP markets to follow a similar evolution to Germany. A CHP market is typically set off by the subsidy of biogas projects. Once the installed base reaches a critical size, the subsidies are withdrawn, but by that stage the CHP model is understood and utilities migrate to natural gas CHP systems, so there is no overall dip in demand for CHP plants. During FY16, 86% of revenues from system exports were attributable to biogas plants, indicating that these markets are behind Germany with regard to development.

Competition

Exhibit 5: CHP ranking (installed electrical capacity in Germany in kW)

Company	2015
GE Jenbacher	222,058
Caterpillar Solutions	116,039
2G Energy	75,771
Schnell Motoren*	67,409
MTU Onsite Energy	61,290
Elektro Hagl	42,125

Source: Energie & Management November 2016. Note: *Acquired by TEDOM in 2016.

2G is the third largest provider of CHP systems in Germany, which is currently its primary market. 2G differentiates itself from the competition through high electric and thermal efficiencies, durability

and availability, system solution expertise, integrated machine and control software and its service and maintenance offer. Importantly, the system integration and software expertise helps 2G offer customised products on a turnkey basis, unlike competitors. Management notes that while the output from GE Jenbacher is sufficient to justify its top ranking, the difference in output between GE Jenbacher and its nearest competitor is somewhat overstated. This is because some of the CHP engines from GE Jenbacher are sold to 2G Energy for integration into complete CHP systems, so there is an element of double counting in the GE Jenbacher total. Management estimates that 2G has a quarter share of the German biogas market and a one-third share of the German natural gas market. It intends to maintain or expand this share, as well as developing the export business.

Strategy

Management's goal is to grow revenues to more than €200m and improve EBIT margins. In order to achieve this it is investing in several areas:

- **Internationalisation:** this is essential in order to be resilient to changes in legislative frameworks in any single territory. Management is aiming for 50% of CHP product sales to be generated outside Germany by 2018. As part of this strategy, 2G has developed its own direct sales network, most recently opening an office in France during FY16. It is augmenting this through a more sophisticated use of third parties, categorising these according to their level of engagement and training the top tier partners, eg Sino German Green Technology Co in China, Technis and Tsuchiya in Japan and Veolia in the UK, so they can carry out simpler servicing themselves. It has developed a partner portal, my.2-g.com, which supports partners by remotely monitoring installations, providing technical information on individual plants and products and automating the ordering of spare parts and managing customer issues. In parallel, management is allocating resource to ensuring that the CHP generators and the company's processes are compliant with the standards required in the target markets. During FY16 export revenues rose by 28% year-on-year in absolute terms, from 27% of the total to 30% during FY16.
- **Product development:** as discussed above, the group is continuously investing in hardware and software development. Development areas include improvement in availability and the length of time between maintenance inspections; broadening the types of input gases that can be used, thus extending the range of application areas; using remote management software to improve the efficiency of the Service operation; and using control software to integrate CHP generators into intelligent networked energy systems. The new aura product range, which was launched at the Hannover Trade Fair in April 2017, runs on natural gas, is highly thermally efficient and is optimised for low NO_x emissions by mixing gas and air in the correct proportions to ensure that any potentially harmful particulates are completely burnt, thus avoiding the need to process the exhaust gases to remove pollutants. 2G has also developed catalytic converters that can be retrofitted to other models to ensure they will be compliant when the new German Air Pollution Act comes into force in January 2018.
- **Add-on capability:** as discussed above, management has invested in complementary capabilities that add value to the core product and service offering. These capabilities include the partner portal and vendor financing.

Recent newsflow – Q117 order intake more than doubled

During Q117, new order intake doubled to €29.4m, resulting in an order book totalling €111.1m at end April compared with €88.0m a year previously. Around half of the order book relates to exports, primarily to the UK, the US and France. Around 80% of the German order book was for biogas systems, which benefited from legislation under the German Renewable Energies Act, intended to make existing CHP plants more flexible. Sales during the quarter rose by 20% to €30.4m, with growth attributable to the final invoices associated with CHP orders placed during FY16 together with a high level of service revenues. EBIT losses were €0.5m compared with €0.1m profit in Q116.

This seasonally low result is the consequence of the way the German Commercial Code accounts for work in progress and does not provide any indication of performance for the year as a whole.

Given the order book position, and noting the market and competitive position, management expects total revenues of €160-180m, with the Service business and sales of replacement parts contributing around €60m to this. Citing significantly improved margins in the Service business following the organisational changes effected in the two previous years, together with efficiency gains derived from use of advanced digital service and maintenance, management expects the EBIT margin to be 3-5%. Noting that management's stated focus during FY17 is on a broad-based cost reduction programme, including withdrawing from the engineering, procurement and construction (EPC) activity that depressed margins during FY16 (see Financials section), eliminating spikes in production at Heek by having some popular models in stock and further optimisations in the Service business, this margin improvement appears feasible.

Management

Christian Grotholt (CEO): Mr Grotholt co-founded 2G in 1995, together with his partner Mr Gausling. Mr Grotholt became CEO in July 2007 following the stock market listing and is responsible for strategy, sales, service and R&D. Under his leadership the company has progressed from a packager of co-generation engines to an international developer and manufacturer of combined heat and power plants. After his apprenticeship as an electronic technician in 1989 and some years of relevant professional experience, he completed his studies of electrical engineering at Dortmund Polytechnic specialising in power engineering. Mr Grotholt is to temporarily assume the CFO role in August when the current CFO, Dietmar Brockhaus, steps down from the management board. The supervisory board has recently extended the contracts for both Mr Grotholt and the COO Mr Holtkamp for five years, extending until July 2022, providing a high degree of stability in the management of the company.

Ludger Holtkamp (COO): Mr Holtkamp has been COO of 2G since the company listed in July 2007. He is responsible for procurement, production and project management. He is a specialist in technical engineering and has more than 30 years of professional experience, including assembling CHP plants. Before joining 2G he worked for OSMO, a sizeable German plant manufacturer, managing complex projects with up to 30MW of thermal power during 12 years as head of the department for plant engineering and construction. After his apprenticeship as a heating system installer, Mr Holtkamp completed two on-the-job training periods as a certified technician in the field of mechanical engineering and in the field of heating, ventilation and air conditioning.

Shareholders

Exhibit 6: Significant shareholders	
Shareholder	Holding
Christian Grotholt	30.0%
Ludger Gausling	23.1%
Van Lanschot NV (Kempen Capital Management)	10.7%
Source: 2G Energy	

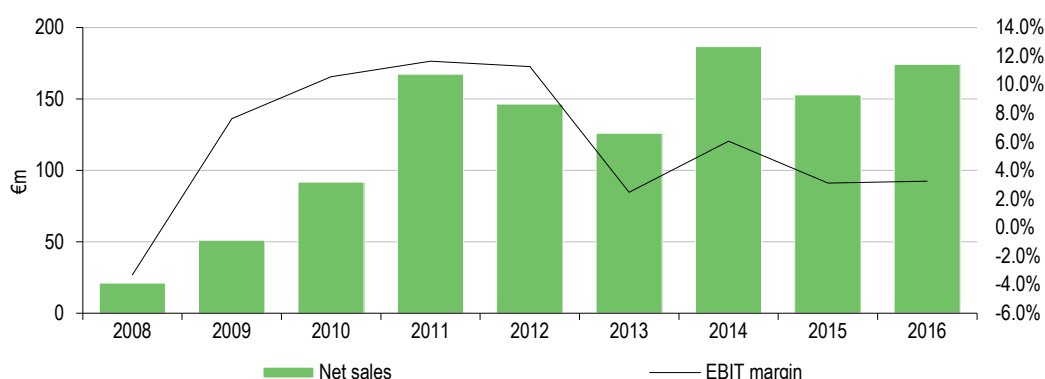
The shareholder list is dominated by the two founders, Mr Grotholt and Mr Gausling.

Financials

2G's challenge is to maintain profitability despite major fluctuations in demand for biogas plants in Germany caused by legislation. Diversification into natural gas-based systems and development of

export markets has helped stabilise revenues, but management continues to take action to improve profitability (see Exhibit 7).

Exhibit 7: Profitability



Source: 2G Energy data

Income statement

Group sales rose by 14% (€21.4m) year-on-year to €174.3m during FY16. Sales of CHP systems in Germany accounted for €18.2m of this increase, of which 70% was attributable to biogas systems, demonstrating the recovery in the market. CHP exports grew by 21% year-on-year to 34% of system sales. Service revenues increased by 10% year-on-year, with the growth being derived from overseas customers, reflecting the rising number of systems under management. Service revenues accounted for 33% of total sales, providing a useful buffer against fluctuations in demand for biogas plants resulting from changes in subsidies.

Exhibit 8: Financial summary

€000s	2015	2016	2017e	2018e	2019e
Year end 31 December	HGB	HGB	HGB	HGB	HGB
PROFIT & LOSS					
Revenue	152,884	174,299	180,000	190,667	201,000
EBITDA	8,160	7,550	11,833	14,467	16,700
Operating Profit	4,861	3,963	8,363	10,807	12,867
Profit Before Tax (FRS 3)	4,576	3,595	8,027	10,467	12,533
Tax	(1,885)	(1,699)	-	-	-
Profit After Tax	2,691	1,896	5,440	7,127	8,520
EPS (€)	0.59	0.40	1.23	1.60	1.93
Dividend per share (€)	0.37	0.40	0.40	0.42	0.45
BALANCE SHEET					
Fixed Assets	23,475	24,635	-	-	-
Current assets incl. prepayments, accrued income and deferred tax	72,380	86,754	-	-	-
Equity	52,647	52,916	-	-	-
Liabilities and provisions	43,208	58,473	-	-	-
Net assets	52,647	52,916	-	-	-
Net funds	4,236	3,923	-	-	-
CASH FLOW					
Operating Cash Flow	2,062	6,382	-	-	-
Cash flow from investing activities	(1,016)	(4,544)	-	-	-
Cash flow from financing activities	(1,888)	(1,703)	-	-	-
Net Cash Flow	(842)	135	-	-	-
Cash at end December	10,128	10,187	-	-	-

Source: 2G Energy accounts, Bloomberg consensus estimates

Cost of materials increased by 5.1pp year-on-year, reflecting higher inventory levels at the year end and a €9.6m rise in expenditure on purchased services. These were substantially higher because of the costs associated with providing a complete package including EPC for several large projects and of dealing with peaks in production capacity at Heek. The increase in cost of sales was broadly equivalent to the increase in revenues. Management has addressed these two issues by deciding

not to go after any further business requiring substantial amounts of EPC work and by building up inventory for some commonly purchased models rather than building only against firm contracts, as has previously been the case. The ability to deliver certain models from stock will help reduce delivery times, providing a competitive advantage, and improve purchasing prices of some components. This decision resulted in the rise in inventory at the end of December 2016 noted above. We expect these two actions to result in improved gross margins going forward.

Total indirect costs were similar in both years, with a small increase in personnel costs (which reduced as a proportion of revenues) being offset by a 13% reduction in administrative expenses, a 5% fall in sales and marketing expenses and lower levels of exceptional costs, so were not a factor behind the drop in profitability. Profit before tax would have been similar to the previous year had it not been for a €1.1m reduction in contribution from currency translation, which was included in the 'Other income' category. This resulted in a €1.0m (21%) fall in profit before tax to €3.6m. EBIT margin rose by 0.1pp to 3.2%. Despite the reduction in profits, management raised the dividend by 8.1% to €0.4/share, to signal its confidence in future growth. Note: total FY16 operating expenses include a €1.8m provision against disputed overseas tax.

Balance sheet and cash flow

Operating cash flow increased by €4.3m as the reduction in operating profit and €11.1m increase in inventory (required for the reason discussed above) was offset by a €14.1m jump in payables. Cash outflow from investing activities was substantially higher than in previous years (€4.5m vs €1.0m) because of a €0.6m down payment to secure additional working space at Heek and €2.5m investment in CHP plants for the leasing activity. The additional 7,500m² workspace will be used to house the remote service team, hold stock and provide space away from new-build activity for overhauling old CHP engines. It will become operational in Q118. Net funds reduced by €0.3m to €3.9m. We note that completion of vendor financing arrangements during Q117 will mean that most projects will be financed by the third party, minimising the amount of debt associated with leased plant that will be added to 2G's balance sheet going forward. During FY16 2G Rental drew down €2.2m of refinancing loans, which was partly offset by the scheduled repayment of €1.8m borrowings. Net assets rose by €0.3m to €52.9m.

Valuation

Peer valuation

A comparison of prospective peer multiples for companies providing equipment for generating renewable energy yields limited information because few of the companies have reached commercial revenues and even fewer are generating meaningful profits. 2G Energy is trading on prospective EV/Sales multiples that are lower than our sample mean, which is to be expected given that it has been generating substantial revenues and profits for several years, and on P/E multiples that are similar.

A comparison against established boiler manufacturers shows 2G Energy trading at a discount to the mean for the sample with respect to EV/Sales, in line with the sample mean for EV/EBITDA multiples, towards the upper bound of our sample with regard to year 1 P/E ratios but in line with year 2 P/E multiples. This indicates that the shares are fairly priced at current levels with potential for an uplift if management is able to raise EBIT margins above the levels shown in the consensus estimates so they are closer to those for Generac Holdings.

Exhibit 9: Peer comparison

Company	Market cap (€)	Current EV/Sales (x)	Next EV/ Sales (x)	Current EV/ EBITDA (x)	Next EV/ EBITDA (x)	Current P/E (x)	Next P/E (x)	Year 1 EBIT margin (%)
AFC Energy	50m	9.8	3.0	-	-	-	-	-
Ballard Power Systems Inc	462m	4.2	3.4	-	84.7	-	-	-
Ceres Power Holdings	107m	38.7	29.0	-	-	-	-	-
Electro Power Systems	53m	3.4	2.0	-	12.1	-	35.1	-
Enertime	14m	1.9	1.6	-	-	-	-	-
FuelCell Energy Inc	55m	0.8	0.6	-	-	-	-	-
Hydrogenics Corp	100m	2.2	1.5	-	42.0	-	-	-
Intelligent Energy Holdings	16m	0.6	-	-	-	-	-	-
ITM Power	71m	8.2	4.9	-	-	-	-	-
Nordex	1,148m	0.4	0.4	4.9	4.6	15.9	14.0	-
Plug Power Inc	426m	3.6	2.3	-	97.2	-	-	-
Redt Energy	55m	3.2	1.1	-	26.0	-	83.8	-
Senvion	871m	0.4	0.4	5.3	4.5	16.2	13.7	-
SFC Energy	36m	0.7	0.7	122.3	39.0	-	-	-
Vestas Wind Systems A/S	132,207m	12.8	12.2	72.6	70.0	131.4	121.4	-
Renewable energy equipment mean		1.9	1.5	5.1	4.5	16.0	13.8	-
Deutz	934m	0.6	0.6	6.6	5.9	19.0	18.9	3.6
Generac Holdings Inc	1,977m	2.1	2.0	11.3	10.6	13.0	12.1	14.9
Rafako	161m	0.4	0.4	7.1	7.3	10.5	10.7	4.7
United Power Technology	4m	-	-	-	-	-	1.8	0.5
Conventional boiler mean		1.0	1.0	8.3	7.9	14.1	13.9	-
2G Energy	99m	0.5	0.5	8.0	6.5	18.1	13.9	4.6

Source: Bloomberg. Note: Grey shading indicates exclusion from mean. Prices at 9 June 2017.

Catalysts and the future

We identify two key areas where investors should look for progress: one internal, the other external. Investors will be keen to see management's initiatives to raise margins, as discussed above, delivering results. They will also be keen to see a recovery in demand in Germany for natural gas-based CHP systems, which is currently at a low level for the reasons previously discussed.

Sensitivities

- **Spark spread:** the economic case for generating electricity from natural gas depends on the size of the spark spread. Government levies on electricity are likely to keep electricity prices high, while a surplus of supply over demand is likely to keep natural gas prices low, thus maintaining the spark spread.
- **Competitive technology:** although natural gas-powered CHP systems are cited as an option for addressing the fluctuating output from wind and solar systems, alternative architectures deploy battery energy storage systems to store surplus energy generated by renewable sources or fuel cells to generate power from natural gas.
- **Regulatory hedging:** as discussed above, changes to the German Renewable Energy Act and the German Cogeneration Act have a significant impact on demand for biogas and natural gas-powered CHP systems respectively. 2G has addressed this by entering export markets, diversifying from biogas into natural gas-fuelled systems and building up Service revenues.
- **Cost of expansion overseas:** while development of export markets is advisable as it decouples the company's fortunes from the German regulatory environment, it does introduce additional costs. In the case of the North American market, where there is clearly substantial potential for CHP systems, this is only just starting to translate into meaningful levels of sales.

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