Swedish Stirling

Reason: Initiating coverage

Creating electricity out of flared gas

Company sponsored research

Not rated

- Generates electricity from residual gases
- Significant market opportunity, Glencore a new customer
- Valuation range of SEK 8-19 per share

A clean-tech solution with significant CO2 savings

We initiate coverage on Swedish Stirling, a company with a technology that generates electricity from utilising the flaring of residual gases. The technology is based on the Stirling engine technology, which is fuelled by a heat source. Companies that operate with processes that require flaring of residual gases have long looked for ways to convert the heat into electricity, without much success, usually due to the complexity of the residual gases. Swedish Stirling's PWR BLOK solves this problem, according to the company, and offers a cost of energy that is superior to all other clean-tech solutions, including hydro and wind.

Promising market potential, starting with FeCr in South Africa

The company has had initial success in South Africa's Ferrochrome industry. Electricity accounts for roughly 1/3 of the cost base for a Ferrochrome smelter in South Africa, and the PWR BLOK can help lower this by 15-18%, having a material effect on profitability. Swedish Stirling has won contracts with two Ferrochrome companies so far: Afarak (the smallest player) and Glencore (the second-largest player). The contract with Glencore is particularly interesting, given its global reach and the potential for Swedish Stirling to grow with this customer on a global basis. The focus on South Africa is just the beginning, we believe. Should the technology become proven in this market, there should be significant demand elsewhere, across industries where flaring is used.

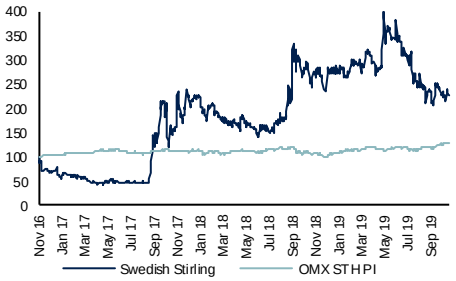
Value range of SEK 8-19 per share

We have valued Swedish Stirling using three scenarios, in which we assume different levels of market penetration for the PWR BLOK technology. We use a DCF valuation using a 12% WACC for the 2019-2029 period, while assuming an exit multiple in 2030 of 15x P/E, which we discount back applying the same WACC as used in the DCF. In our view, the main risks are delays to the acceptance of the technology and the company's ability to ramp up production over the coming 2-3 years.

Lead analyst: Olof Cederholm
Mattias Ehrenborg

Share price (SEK)	18/11/2019 9.6
Capital Goods, Sweden	
STRLNG.NGM/STRLNG:SS	
MCap (SEKm)	763
MCap (EURm)	71.6
Net debt (EURm)	10
No. of shares (m)	79.5
Free float (%)	*100.0*
Av. daily volume (k)	0
Next event	Q4 report: 18 Feb

Performance



	1m	3m	12m
Absolute (%)	*-5.9*	*-15.0*	*-9.0*
OMX STH PI (%)	*3.2*	*12.1*	*18.5*

Source: FactSet

SEKm	2017	2018	2019e	2020e	2021e
Sales	34	58	42	70	76
EBITDA	-5	-15	-25	-35	-51
EBITDA margin (%)	*-14.9*	*-24.9*	*-58.0*	*-49.8*	*-67.5*
EBIT adj	-5	-15	-26	-37	-53
EBIT adj margin (%)	*-15.1*	*-25.6*	*-62.1*	*-52.1*	*-70.2*
Pretax profit	-6	-19	-46	-50	-71
EPS rep	-0.07	-0.24	-0.59	-0.63	-0.90
EPS adj	-0.07	-0.24	-0.59	-0.63	-0.90
Sales growth (%)	*60.0*	*71.4*	*-27.2*	*65.9*	*7.2*
EPS growth (%)	*32.3*	*-245.6*	*-145.1*	*-6.6*	*-42.8*

Source: ABG Sundal Collier, Company data

	2019e	2020e	2021e
P/E (x)	-16.3	-15.3	-10.7
P/E adj (x)	-16.3	-15.3	-10.7
P/BVPS (x)	3.02	3.76	5.80
EV/EBITDA (x)	-35.3	-28.0	-20.6
EV/EBIT adj (x)	-33.0	-26.8	-19.8
EV/sales (x)	20.45	13.95	13.92
ROE adj (%)	*-17.7*	*-21.9*	*-42.7*
Dividend yield (%)	*0*	*0*	*0*
FCF yield (%)	*-13.7*	*-14.8*	*-9.2*
Lease adj. FCF yld (%)	*-13.7*	*-14.8*	*-9.2*
Net IB debt/EBITDA	-4.3	-6.3	-5.6
Lease adj. ND/EBITDA	-4.3	-6.3	-5.6

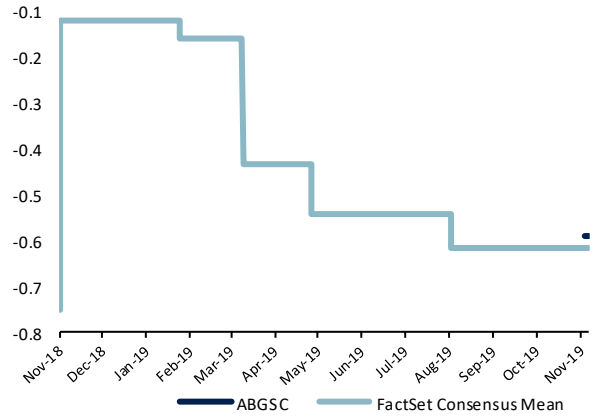
Opportunities

Swedish Stirling, through its PWR BLOK equipment, has the opportunity to help the metal processing industry lower its electricity costs, while at the same time contributing to lower C02 emissions. Should this be successful, we think there are a wider range of industries that would be interested in the technology, given that it offers a lower cost compared with other clean-tech solutions.

Risks

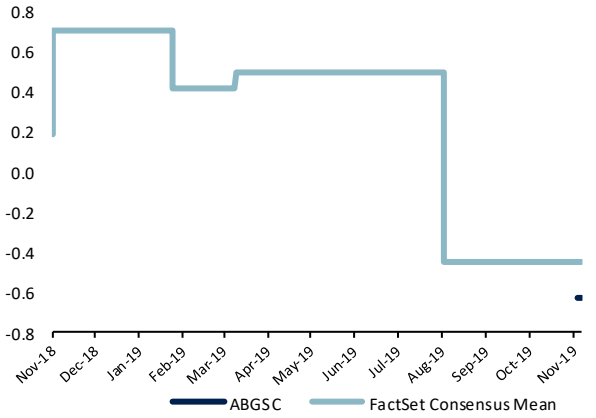
The main risks are related to the product delivery, where delays could affect how customers view the technology. In addition, the metal processing industry is conservative, and sales cycles might be longer than expected. Competing technologies are also a risk.

EPS estimate changes, 2019e, SEK



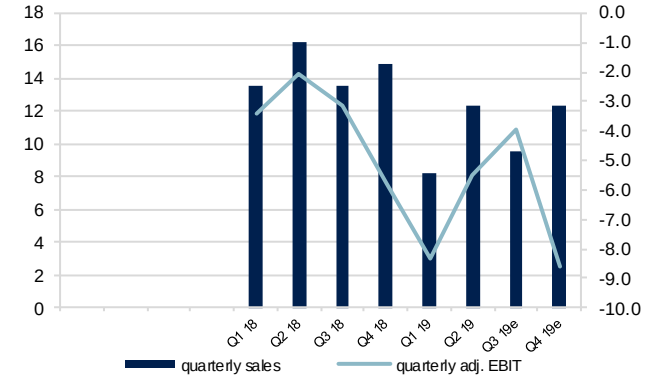
Source: ABG Sundal Collier, FactSet

EPS estimate changes, 2020e, SEK



Source: ABG Sundal Collier, FactSet

Quarterly sales and adj. EBIT, SEKm



Source: ABG Sundal Collier, Company data

Company description

The company was founded in 2008 by the current CEO Gunnar Larsson. Its main technology is the PWR BLOK, which is based on the Stirling engine technology. The technology creates electricity using heat as a fuel source, while not depending on internal combustion. This has enabled the company to develop a product that uses the heat produced by the flaring of residual gases as a fuel source. From that, electricity is produced, which enables the customer to lower operating costs. It also means that the customer doesn't need to purchase as much electricity from the grid, which in emerging markets often means less dependence on coal-fueled power.

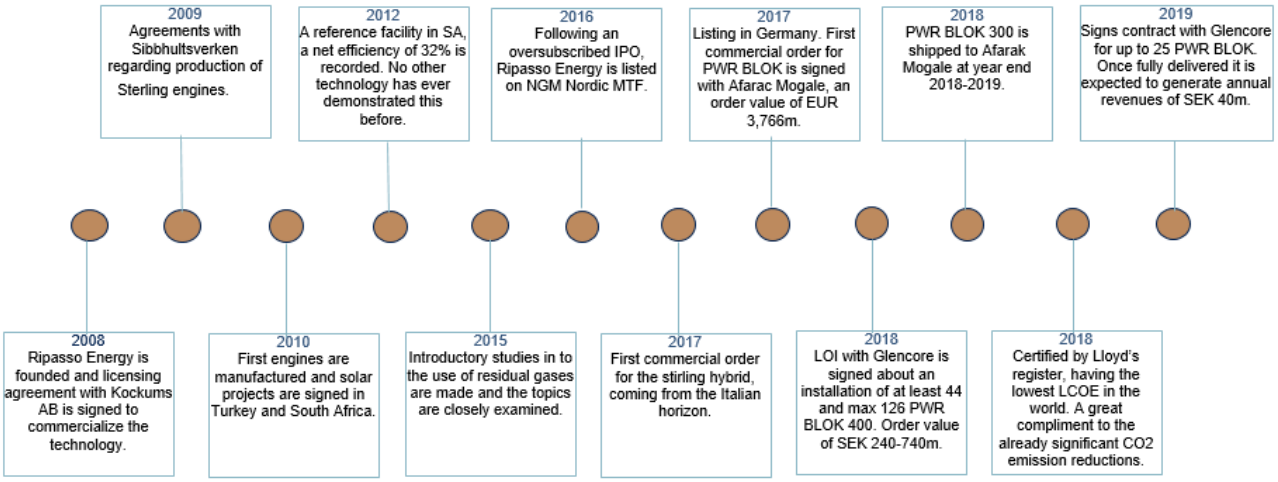
Summary

We initiate coverage of Swedish Stirling, listed on the NGM in Sweden. The company uses the proven Stirling engine technology to utilise the heat coming from the flaring of residual gases, to generate electricity. This can materially lower the electricity costs for the customer (because there is less need to purchase electricity off the grid). Our valuation scenarios point to a valuation range of SEK 8-19 per share.

Swedish Stirling: a brief overview

In 2008, Gunnar Larsson founded Swedish Stirling, which was then known as Ripasso Energy. He came from Kockums, the leading submarine manufacturer in Sweden, where he had intimate knowledge of the Stirling engine technology - which does not require internal combustion, and instead operates using outside heat sources. This technology has been used successfully in the Swedish submarine industry for a long time. The Stirling engine uses a heat source to generate electricity. The first industrial trial was done in solar energy, where the input energy is abundant and free. The company launched the technology in 2012, with initial encouraging results. However, the rapidly decreasing costs of solar energy made the economics unfavourable for the Stirling engine solution. With this experience behind it, the company turned towards another "free" energy source, the flaring of residual gases.

Swedish Stirling 2008-2019



Source: ABG Sundal Collier, company data

The starting point was to find an energy source that could fuel the Stirling engine 24/7. Flaring, or the burning of residual gases in a metal production process, met this criteria. This opportunity was even more interesting since metal producers have struggled for years to find a way of converting the gas to energy, mainly using combustion engine technology. While this has always failed, many times due to the complexity of the residual gases, the Stirling engine technology (branded as PWR BLOKs), is able to deal with these obstacles. At this point Swedish Stirling decided to focus on the South African ferrochrome market, which offers a good mix of flaring and high electricity prices. Here, the Stirling engine can offer savings, using a "free" energy source to produce much cheaper electricity compared with purchasing it off the grid.

Breakthrough order from Glencore

So far, Swedish Stirling has two customer contracts. The first is with Afarak, which is the smallest Ferrochrome producer in South Africa. Swedish Stirling will deliver seven PWR BLOKs to Afarak by 2020. These are financed by Swedish Stirling, and Afarak will pay an annual energy conversion fee of approximately EUR 800k per year once all PWR BLOKs have been installed. The breakthrough for Swedish Stirling came with the contract with Glencore, however, which is in the process of being finalised. This is for up to 25 PWR BLOKs, worth EUR 12.5m at current selling prices (excluding installation and supporting equipment), still financed by Swedish Stirling but estimated to generate an annual revenue of SEK 40m once full installation is completed. The order with Glencore is important in several ways. It proves that a large international mining company, after evaluating the technology, wants to commit to a larger scale project, increasing the credibility of the technology significantly. Also, Glencore in itself offers significant upside once the technology is proven, since it could be interested in the PWR BLOK not only for South African ferrochrome, but also in other regions and segments where flaring is used.

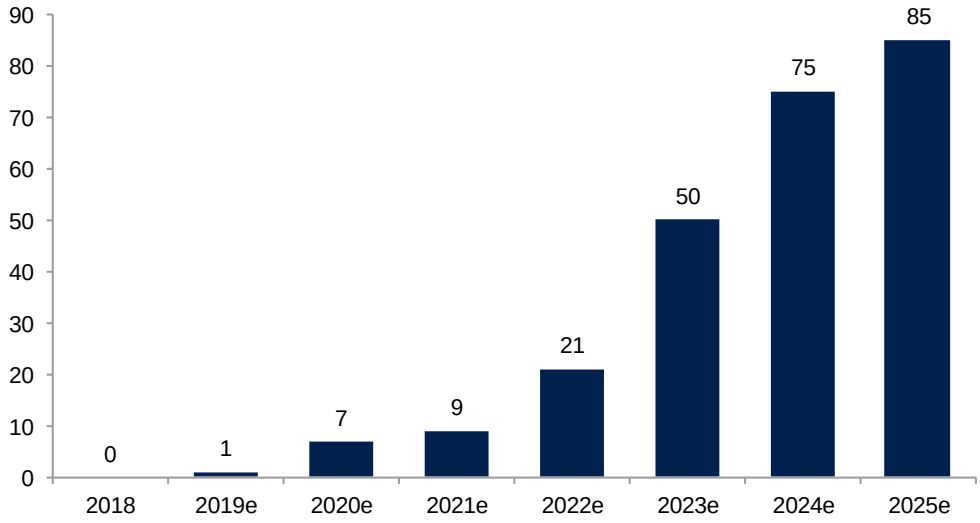
Promising market potential

The total market potential for the PWR BLOK is large. The South African ferrochrome industry alone could mean sales of around 570 PWR BLOKs, if fully penetrated (worth SEK 3bn at current prices). Looking at the ferrochrome industry outside of South Africa could add another SEK 7.1bn in terms of the addressable market. Overall, the total amount of residual gases being flared is high, and should the technology prove itself, applications outside of Ferrochrome should open up. However, this will take a long time to develop, and we expect Swedish Stirling to only scratch the surface of the total market opportunity in the coming ten years.

Forecasts

The current contracts will gradually materialise as sales during ’20e-’21e, with Glencore likely taking until 2022 before being fully installed. Once the technology becomes operational during ’20e-’21e, its efficiency and value-add to customers should be proven, leading to more customer awards. We expect Swedish Stirling to deliver 248 PWR BLOKs by 2025e. This is expected to come from a 40% penetration of the South African ferrochrome market (c. 230 units), and some initial business in the South African ferroalloy industry.

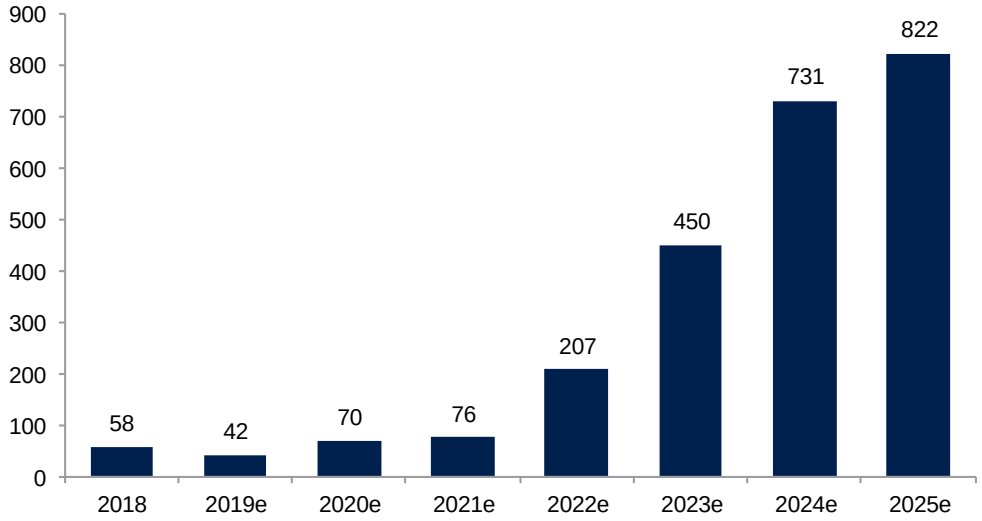
PWR BLOK sales 2018-2025e



Source: ABG Sundal Collier, company data

We anticipate the sales growth to ramp up in 2022e and onwards, helped by the higher volumes, but also by price increases. The payback time at the current introduction price of EUR 500k per PWR BLOK is only around 3-4 years, while the product lifespan should be around 25 years. Once the technology is proven we think Swedish Stirling should be able to raise prices towards EUR 700k, which still means an attractive payback time of 5-6 year.

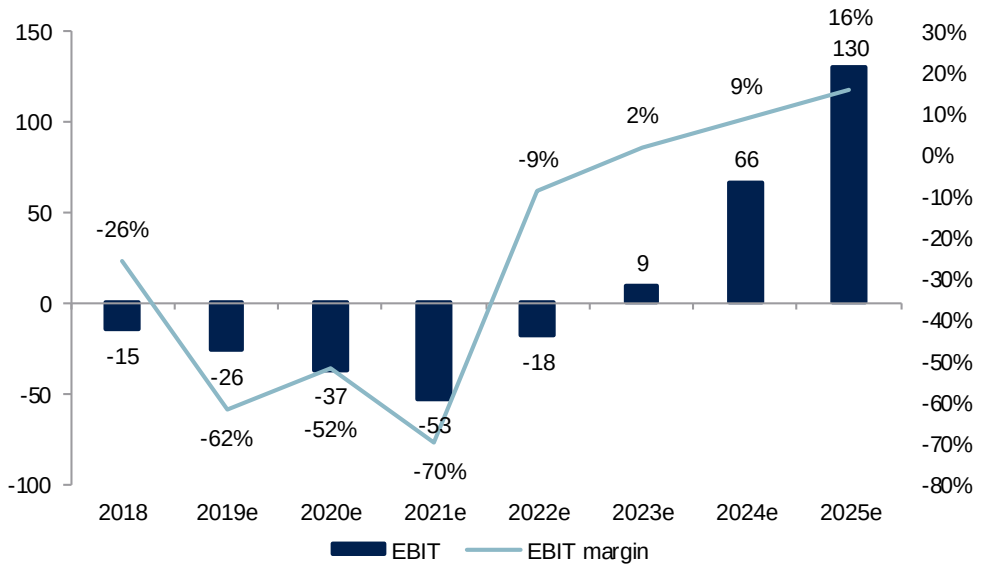
Sales forecast 2018-2025e (SEKm)



Source: ABG Sundal Collier, company data

We forecast EBIT break-even at 2023e, when the company has achieved enough volumes to raise production efficiency. Additional volume growth after that will build on earnings. We believe that once a stable sales level of close to SEK 1bn is reached an EBIT margin of around 20% should be possible.

EBIT forecast 2018-2025e (SEKm)



Source: ABG Sundal Collier, company data

Valuation

We have based our valuation range of SEK 8-19 per share on a DCF approach, where we value the cash flows during '20e-'29e using a WACC of 12%. On top of that we have assumed an "exit" P/E multiple of 15x that we apply to a "normalised" earnings level in 2030, then discounted back using the 12% WACC. We have also assumed full conversion of the 2017 convertible, which adds 5.7m shares.

Valuation range SEK 8-19 per share (assuming dilution from 2017 convertible)

Scenario 1		Scenario 2		Scenario 3	
No. Of PWR BLK acc.	1,150	No. Of PWR BLK acc.	900	No. Of PWR BLK acc.	650
Total sales CAGR	34.6%	Total sales CAGR	30.2%	Total sales CAGR	24.7%
Ebit margin 27-32	20.0%	Ebit margin 27-32	21.1%	Ebit margin 27-32	18.0%
Wacc	12.0%	Wacc	12.0%	Wacc	12.0%
Exit multiple (P/E)	15.0x	Exit multiple (P/E)	15.0x	Exit multiple (P/E)	15.0x
No of shares (m)	85.2	No of shares (m)	85.2	No of shares (m)	85.2
Value per Share	19	Value per share	13	Value per share	8

Source: ABG Sundal Collier, company data

The valuation is of course sensitive to the inputs. If we assume different types of WACC and exit multiples, the value range widens significantly. We believe that once Swedish Stirling has been able to prove the technology and sees an increasing order intake, investors could be willing to lower the risk premium (or increase the assumed exit multiple) due to the significant market potential for the PWR BLOK technology.

Scenario 2 – WACC and exit multiple sensitivity

		Exit multiple				
		10.0x	12.5x	15.0x	17.5x	20.0x
Wacc	10%	11	13	16	18	21
	11%	10	12	14	17	19
	12%	9	11	13	15	17
	13%	8	10	12	14	16
	14%	7	9	11	13	14

Source: ABG Sundal Collier, company data

The Stirling engine – a problem solver

Residual gases occur in all metal production globally, and are flared in most markets. The reason for flaring instead of fully releasing them to the atmosphere is due to their high levels of carbon monoxide, which is toxic. When the gas is flared, it converts to carbon dioxide – which is not as toxic but still harmful to nature.

In some developed markets, the energy of the gas is transferred to water going into district heating systems – which is very efficient as minimal heat is lost. However, in most markets district heating is not an option, particularly in emerging markets such as South Africa. There is no infrastructure for this, and the gas has to be flared, with a significant loss of energy. Overall, with most ore reserves located in emerging markets, gas flaring is far more common than other solutions. Swedish Stirling's product can be used for any type of gas flaring, as it is independent of fuel source, i.e. the gas composition. This is something that no other technology or product has managed to offer, and the key strength in our view. This means the PWR BLOK can produce electricity using residual gases that would be flared regardless, creating a "free" energy source. It also means that it can lower the customers' need to purchase electricity from the grid, which implicitly means it helps to lower CO2 emissions. This is particularly true in emerging markets, where a lot of the electricity comes from coal-fired power plants.

How does it work?

The Stirling engine is unique, but the technology on which it is based has been around for about 200 years. It has been used extensively in the Swedish submarine industry, but also in other countries. The engine uses a temperature difference, and converts this into a mechanical motion. The engine is closed, i.e. the heat is only applied externally, which makes the fuel source very flexible. Also, since there is no internal combustion, it does not affect the inside of the engine, resulting in low maintenance requirements and a long life time of about 25 years.

The PWR BLOK

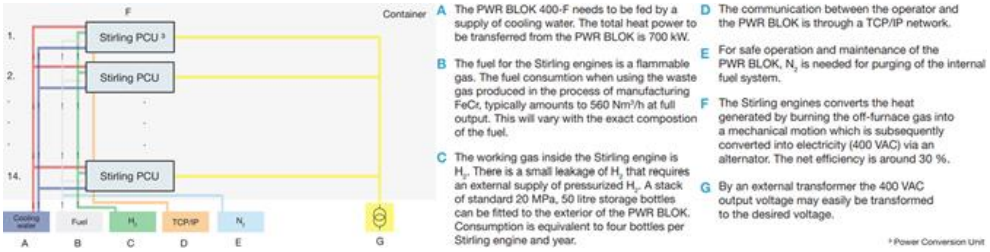
The PWR BLOK is a container-based solution that fits 14 Stirling engines and can deliver a combined net effect of 400kW. The relatively small size means it can be placed close to the fuel source.

PWR BLOK – 14 Stirling engines

Source: ABG Sundal Collier, company data

The technology is not only superior to competing technologies in terms of application, i.e. that it can use any source of fuel (as long as heat is produced) to generate electricity which others cannot. It also delivers a low cost of electricity. According to the international certification institute Lloyd's Register, the PWR BLOK offers a LCOE of 20 EUR/MWh, making it 2x cheaper than wind power and 4x cheaper than nuclear power.

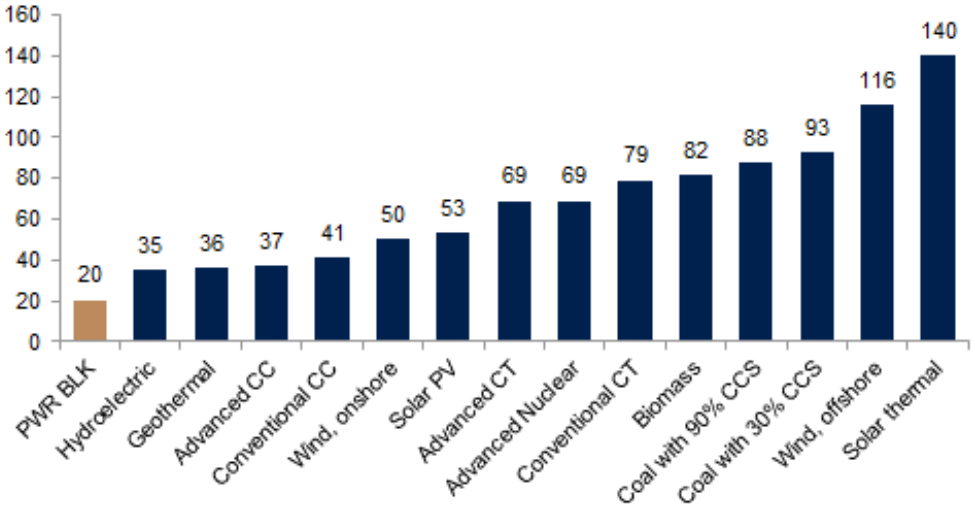
Schematics of the PWR BLOK



Source: ABG Sundal Collier, company data

Levelized Cost of Energy, commonly referred to as LCOE, is a technical-neutral way of comparing the costs of producing one MWh between different technologies. The LCOE represents the present value of all costs associated with the investment and maintenance of any source of electricity over its expected lifetime, put in relation to the present value of the expected production. The PWR BLOK's low LCOE of 20 is outstanding in comparison to all other electricity sources, including wind, nuclear, and hydro. The key drivers are: 1) low capex and installation costs, 2) zero additional fuel costs, 3) low maintenance costs, and 4) high capacity utilisation driven by high availability of fuel (usually 24/7).

Levelized Cost of Energy (LCOE) – different technologies



Source: ABG Sundal Collier, company data

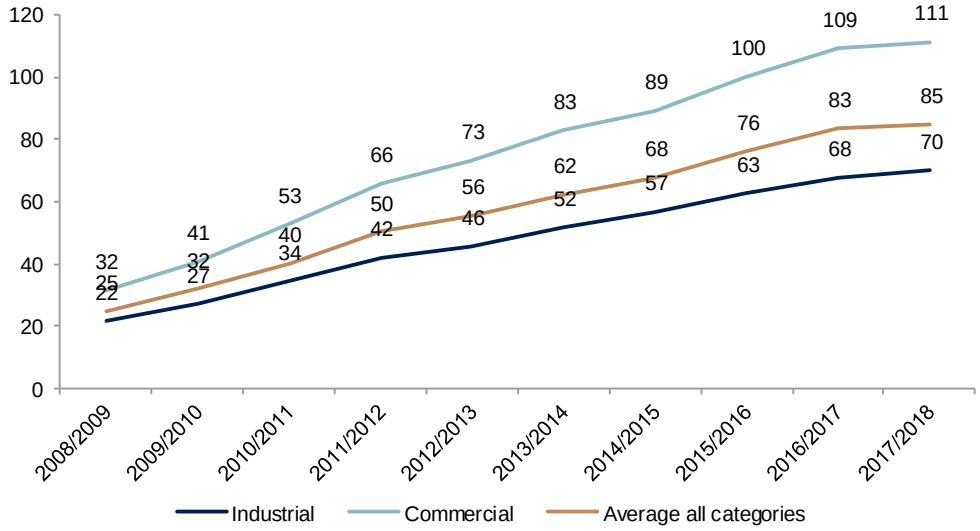
To sum up, the ability of the Stirling technology to generate electricity through only using an outside heat source makes it interesting for the metal processing industry. Firstly the energy source is free, i.e. it comes from a source that would always be there (flaring). Secondly, the heat source offers close to 100% availability. Thirdly, the wear is very low, which brings low maintenance costs and offers a very long lifetime of 25 years for the product.

South Africa and Ferrochrome

South Africa is home to around 1/3 of global ferrochrome production. Ferrochrome is used in the production of stainless steel, which has grown by c. 5% annually over the last 70 years. The South African ferrochrome market is very concentrated, dominated by Glencore and Samancor, which together hold c. 90% of the market. We estimate that electricity accounts for 1/3 of the cost base of a Ferrochrome smelter, which means that the industry is likely to find the PWR BLOK interesting, in order to improve profitability.

Not only are electricity prices high in South Africa, the outlook is for even higher prices going forward, according to the IMF. Since 2008, electricity prices have increased at an average rate of 13%, hurting the industry's margins.

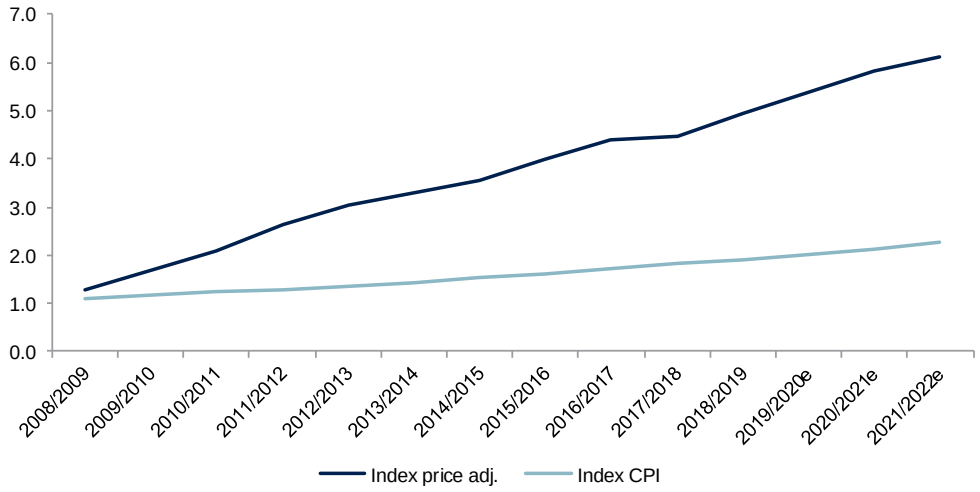
Electricity prices in South Africa 2008-2018 (ZAR cents/KWh)



Source: ABG Sundal Collier, company data, IMF

In order to offset this, ferrochrome smelters have tried to use flared residual gases, but have failed to find a good solution. The difficulty comes from the combination of using internal combustion technology and the complexity of the gases and the heat that is generated by the flaring. The high volatility of the gas output has resulted in internal combustion engines having severe engine failures. This is where the Stirling technology comes in, since it is a reciprocating heat engine, which uses the outside heat provided by the flaring to generate movement, and ultimately electricity.

South African electricity price index relative to inflation 2008-2021e



Source: ABG Sundal Collier, company data, IMF

We think that due to the high industrial electricity prices in South Africa (around 54 EUR/MWh), the PWR BLOK can offer a cost saving of around 24 EUR/MWh, which implies 15-18% of the electricity costs for a ferrochrome smelter. This is significant, particularly since the electricity price outlook is for further material increases during the coming years (due to low profitability at Eskom, the state-owned utility).

Carbon tax in South Africa – another strength of the PWR BLOK

In South Africa around 90% of electricity production comes from coal, and carbon emissions are material. In 2020, the South African government is expected to implement carbon taxes that will punish large electricity consumers. This improves the business case further for the PWR BLOK. In addition, for every fossil-free MWh produced by the PWR BLOK, an emission right is generated which could be traded. We believe these emissions could be worth up to EUR 800/MWh, which would imply additional value of SEK 0.2m per PWR BLOK and year.

The PWR BLOK market opportunity in South Africa

As mentioned, the ferrochrome market is dominated by two companies that roughly split 90% of the market, Glencore and Samancor. In addition, there is a smaller company, Afarak, which holds the remainder of the market.

Overview South Africa Ferrochrome opportunity

Company	Plant	PWR BLOK capacity
Samancor	Ferrometals	51
Samancor	MFC	40
Samancor	Tubatse	0
Samancor	ASA Metals	53
Samancor	TC Smelters	53
Samancor	Hemic	91
Glencore	Boshoek	51
Glencore	Lydenburg	55
Glencore	Lion	164
Glencore	Wonderkop	0
Glencore	Rustenburg	0
Assmang	Machadodorp	0
Afarak	Mogale	14
Traxys	Richards Bays Alloys	0
Total		**572**
Value SEKm		3060

Source: ABG Sundal Collier, company data

This market estimate includes only smelters that are using closed furnaces. The difference between a closed and an open furnace is that a closed furnace captures residual gas and flares it, while an open furnace does not capture the residual gases, instead burning it off on the surface of the furnace. Open furnaces are no longer allowed to be built, however (for environmental reasons), meaning that any new smelters being built in South Africa could potentially become a customer of Swedish Stirling. In addition, open furnaces can be rebuilt into a closed furnace, but we are not including this potential in our scenario.

The company estimates that the current addressable ferrochrome market in South Africa amounts to around 570 PWR BLOKS, or SEK 3bn given the current selling price of EUR 500k per unit.

Opportunities beyond South Africa & Ferrochrome

We believe that the total potential addressable market for Swedish Stirling is significant. The company's product help customers convert residual gas to electricity generating big cost savings for big electricity consumers, and this driver should give the company great opportunities in markets outside of South Africa and Ferrochrome. The next logical step is either to stay in South Africa and pursue other metal processing markets, or go outside of the country to expand its presence in the global Ferrochrome market.

Global ferrochrome opportunity valued at around SEK 10bn

We estimate that the global Ferrochrome opportunity could amount to a total addressable market of around 2,200 PWR BLOKs, valued at SEK 11.6bn, of which SEK 8.6bn is outside of South Africa. This estimate is based on global ferrochrome production from 2018 (total market of 13.6m tonnes), using the same ratio of PWR BLOK/ktpa as estimated for the South African market.

Global ferrochrome market opportunity (2018)

Market	Prod (mtpa)	Ratio	BLOK	Value (SEKm)
South Africa	3,900	0.016%	572	3,060
India	1,400	0.016%	224	1,198
Kazakhstan	1,300	0.016%	208	1,113
China	5,200	0.016%	832	4,451
RoW	1,800	0.016%	288	1,541
Total	**13,600**	**0.016%**	**2,176**	**11,642**
Total ex SA	9,700		1,604	8,581

Source: ABG Sundal Collier, company data, Merafe Resources

We believe that **India**, **Kazakhstan** and **China** all are attractive **ferrochrome markets** where gas flaring occurs as of today. China is the world's largest ferrochrome market, thus offering the largest potential of what we believe could be up to 830 PWR BLOKS. However, we believe that local knowledge and a network in that country could take time to build for Swedish Stirling, and the price of electricity is unclear. Instead, we think that the Ferrochrome market in India would be a good next step, as it has a good combination of size and even higher electricity prices than those in South Africa. This would mean the PWR BLOK should offer even greater savings for Indian producers than for those in South Africa, which would help the sales process.

On the other hand, Kazakhstan (one of the leading producers in the world), benefits from low electricity prices. That makes the PWR BLOK technology less attractive.

What's the next step after FerroChrome?

In South Africa, the most logical step for the company would be to move into the ferroalloy market. **Ferroalloy producers** (ferrosilicon, ferromanganese, etc.) should have similar production terms as ferrochrome and therefore consume large amounts of energy. We understand that installations and residual gas composition are relatively similar to ferrochrome, which makes it easy when taking the next step. It would also help that Swedish Stirling is already known in South Africa, and has experience from working with authorities and companies to get acceptance for the technology. We believe the South African ferroalloy addressable market (excluding FeCr) is around 80 PWR BLOKs.

Ferroalloy market potential (ex FeCr)

Market	Prod (mtpa)	Ratio	BLOK	Value (SEKm)
South Africa	489	0.016%	78	419
India	2,336	0.016%	374	2,000
Kazakhstan	290	0.016%	46	248
Russia	1,493	0.016%	239	1,278
China	38,300	0.016%	6,128	32,785
RoW	8,442	0.016%	1,351	7,226
Total	**51,350**	**0.016%**	**8,216**	**43,956**

Source: ABG Sundal Collier, company data, USGS Minerals Yearbook 2016

Outside of South Africa, the largest opportunity is clearly in China. Again, this is probably a more difficult market to enter for Swedish Stirling, but it should also represent the largest long-term upside for the company, with the ferrochrome and ferroalloy markets combined amounting to close to 7000 PWR BLOK's.

Potential outside of FeCr/Ferroalloys

The potential from other sources of flaring are great. According to the World Bank, around 140.6 bcm of gas worth USD 20bn at current prices was flared in 2017 due to lack of infrastructure. This does not include industry gases that lack direct value, meaning the long-term opportunity could be even greater.

It is evident that gas flaring is a serious environmental problem as it causes serious pollution, and wastes significant economic resources. For example, gas flaring occurs in oil production, where natural gas is a by-product. Because natural gas often has a low price in the oil-producing markets, infrastructure is not developed to capture it. However, in a world where energy efficiency and environmental concerns have increasing importance, Swedish Stirling's PWR BLOK technology could likely play a role.

According to Swedish Stirling, its potential addressable market (including all flared gases) would account for 100,000 PWR BLOKS. While this kind of market potential is extremely high and not part of our investment case, it offers investors an interesting "blue-sky" scenario should the PWR BLOK technology achieve broad acceptance among different industries.

Building the customer base

Swedish Stirling has already contracted both Afarak and Glencore. First was Afarak, where the company will deliver seven PWR BLOKs to the Mogale smelter. These will be delivered by 2020 and run for eight years. Furthermore, Swedish Stirling has a contract with Glencore of up to 25 PWR BLOKs, with the start of delivery in 2020. At the same time, talks are ongoing with Samancor, the state-owned ferrochrome company.

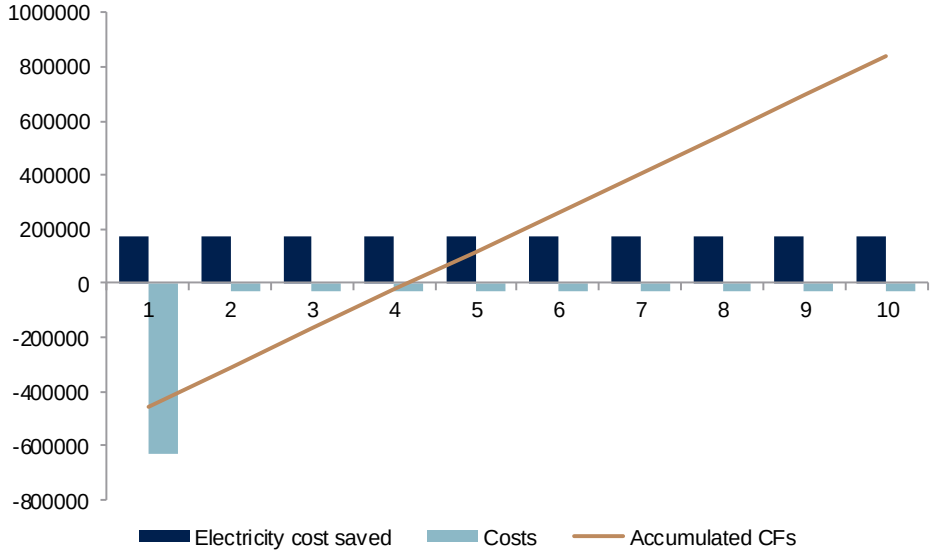
Swedish Stirling has delivered one PWR BLOK so far, which was to Afarak for its Mogale smelter, hence an additional six will be delivered by end-2020. The first BLOK has been operating for six months. As far as we understand, it delivers electricity according to plan with the expected output.

However, the most attractive opportunity is clearly Glencore, which is the world's largest commodities-trading company with a global market share of 60% zinc, 50% copper, 9% grain, and 3% oil. Glencore has production facilities all around the world in more than 50 countries. The company holds a 45% share of the South African ferrochrome market, and offers a potential of 250 PWR BLOKs. The current agreement for up to 25 PWR BLOKs will start to be delivered on in 2020. We think it will take 6-9 months for the technology to show its benefits, with a potential for additional orders from 2021 onwards. We see no reason why Glencore would not install PWR BLOKs in all its smelters if the first installations prove to be successful.

The current selling price is too low, 4-year payback time

Swedish Stirling currently prices its PWR BLOK at EUR 500k per unit. Initial installation costs of EUR 50-150k are added. These costs are mainly from equipment related to the PWR BLOK, such as cooling devices and electronics/transformers. We have assumed EUR 100k in our sales forecast and that the customer will pay for this, but it is likely to decline towards EUR 50k once volume production is achieved. In addition, there is an estimated maintenance cost of EUR 10/MWh to operate the PWR BLOK.

Payback at EUR 500k per unit



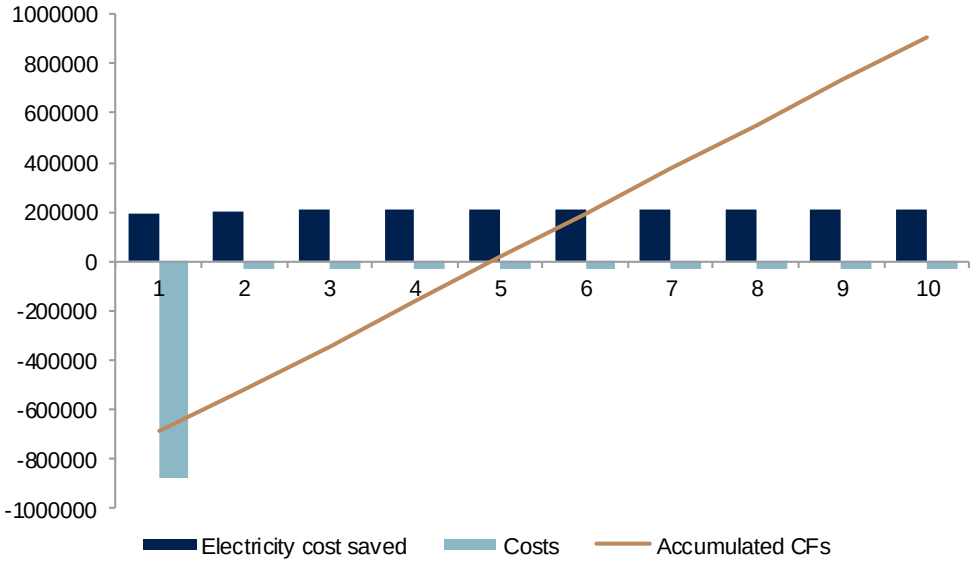
Source: ABG Sundal Collier, company data

All in all, the EUR 500k for the PWR BLOK and additional costs offer a payback time of c. four years for Glencore. This is very low (for example, it is only 1/3 of the payback time in the wind industry). It is even lower considering that the PWR BLOK

is built to last for 25 years. It is clear to us that Swedish Stirling has priced the product at an attractive level in order to create this market opportunity in South Africa. However, once the technology proves itself, we think there is an opportunity to increase selling prices.

In the table below, we can see what different price levels do to the PWR BLOK payback time. We argue that a payback time of 5-6 years would still be very attractive. This would imply a selling price of EUR 700k-800k, up from the current EUR 500k. Despite a higher investment for customers, this would still mean a very low LCOE of around EUR 30/MWh.

Payback at EUR 750k per unit



Source: ABG Sundal Collier, company data

Consequently, once the technology has proven itself in 2021/2022, we think Swedish Stirling will start to raise prices. We model the first price increase in 2022, from EUR 500k to EUR 650k. Then we model a further increase to EUR 750k in 2024, after which we assume prices will be stable. However, as the chart above indicates, there is likely more upside to pricing than we think. If putting the payback of the PWR BLOK at a similar level as wind (12 years), it could mean a price clearly above EUR 1m per PWR BLOK.

As an unproven technology company, Swedish Stirling has had to offer to finance the equipment and install it at the customer sites. The customers will take part of the energy savings and pay an annual energy conversion fee in return.

However, we are confident that as soon as the energy savings are clear, the customers will want to purchase the equipment. Given payback times of 3-4 years at current pricing, that would be the sound economic decision to make.

Deliveries to kick off in ’20e-’21e

Swedish Stirling is expected to start delivery of PWR BLOKs to Glencore in H2’2020, with a ramp up in delivery pace throughout 2021. Initially we think the company will prioritise Glencore over Afarak. All in all, we expect 7 PWR BLOKs to be delivered in 2020, to be followed by around nine in 2021.

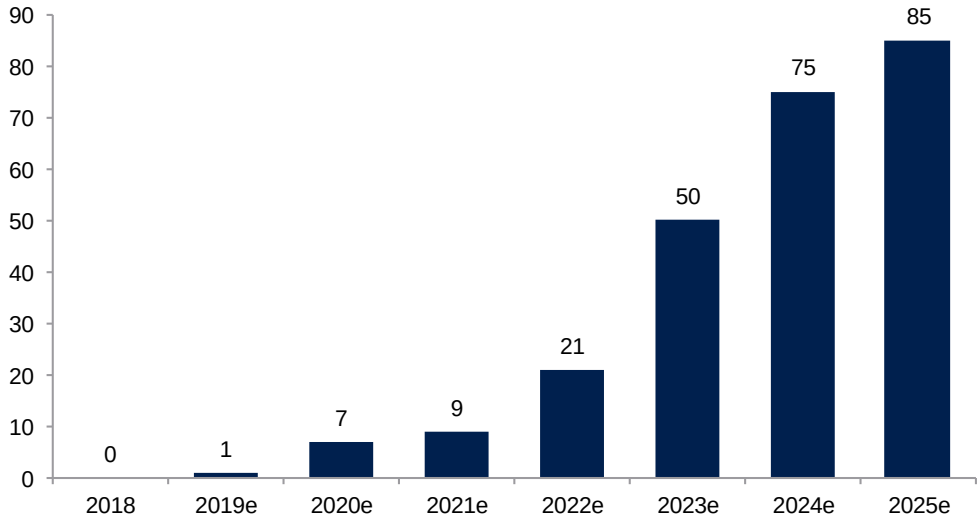
Both Glencore and Afarak have the option of purchasing the PWR BLOKs at any time during the eight-year contract. Given the attractive economics we think this will

happen, but leave it outside our forecasting due to the difficulty in estimating a time for the purchase.

With proof that the technology works in 2021e, we forecast additional orders from Glencore from mid-2021e, with delivery in 2022e onwards. In addition, we also think that Samancor will come in as a customer around that time, at the latest. These are expected to be sold directly to the customers, at a slightly higher price of EUR 650k per unit. With roughly 12 months between order and sales, this will provide a good foundation for sales growth in 2022-2023e.

By the end of 2023, we expect Swedish Stirling to have delivered 88 PWR BLOKs in South Africa, c. 15% of the addressable market in ferrochrome. While we expect further growth in this segment, we think the company should start to see order activity from outside of ferrochrome and South Africa around this time.

Gradual delivery ramp of PWR BLOKs 2018-2025e



Source: ABG Sundal Collier, company data

Production costs and potential cost improvements

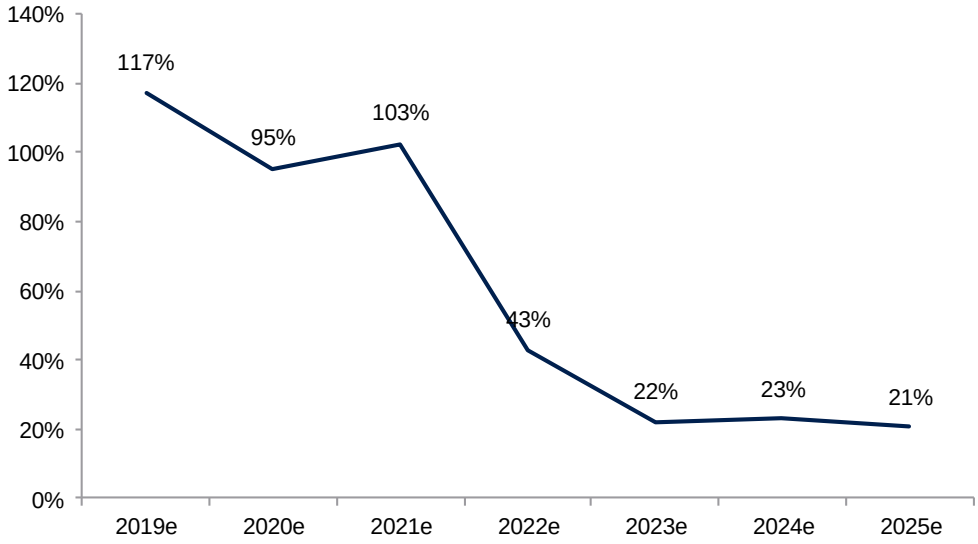
We believe the key to sustainable profitability will be to lower the production costs for the Stirling engine. In order to keep investments contained, production of key components has been outsourced to Sibbhultsverken, which has a factory in the south of Sweden primarily working with the automotive industry. Swedish Stirling has worked with Sibbhultsverken since 2009 regarding the possibility of producing Stirling engines in large volumes.

In order to make the product even more competitive, Swedish Stirling has gone through every component of the engine and the container to analyse the potential cost, and what can be done to lower component/production cost once production reaches higher volumes. The expected unity cost per level of PWR BLOKS can be seen in the chart below. At an annual production level of 70 PWR BLOKs the company expects a gross margin between 30-40%. Initially costs will be higher, meaning the early stage gross margins will probably be closer to 20% than to 30%.

Need to hire to grow

To be able to achieve the expected sales growth, Swedish Stirling needs to grow its number of employees. We expect the headcount to grow from 30 at the end of 2019 to around 60 by the end of 2022. These new people will consist of technical engineers, sales force and administrative employees. This will gradually increase the operating costs compared with sales, but from 2023 we forecast a normalisation of around 20% of sales.

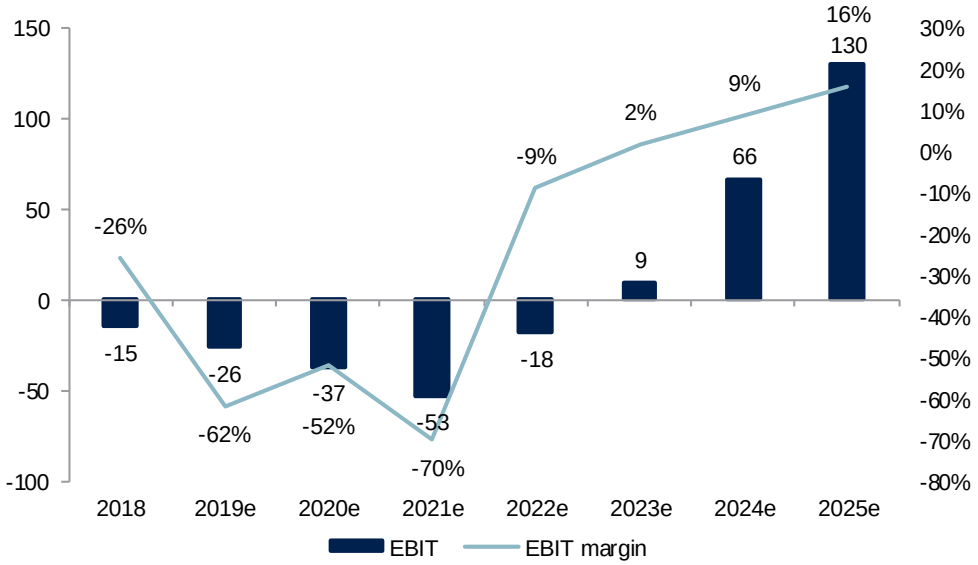
Opex to sales '19e-'25e



Source: ABG Sundal Collier, company data

At the same time, increasing sales and support from improving gross margins will help the company to EBIT break-even in 2023e. We expect the EBIT trough in 2021e, when the company continues to invest in opex and delivery capabilities ahead of the higher delivery volumes expected in 2022 onwards.

EBIT and EBIT margin development '18-'25e

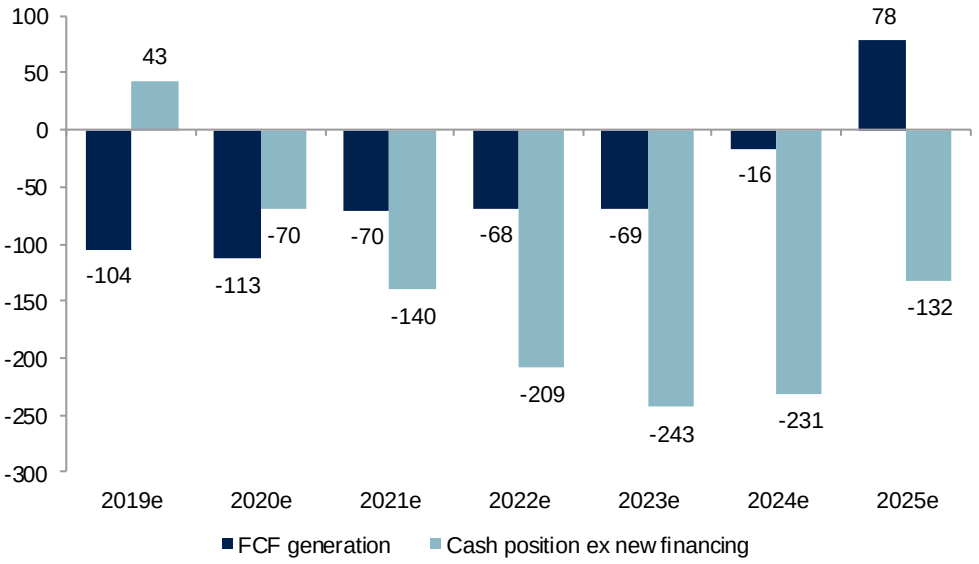


Source: ABG Sundal Collier, company data

Cash flow and balance sheet

We expect Swedish Stirling to start generating positive operating cash flow in 2025, once an annual volume of 85 PWR BLOKs is reached. The cash position was SEK 66m at the end of Q3'19, which we think should last another three quarters. Overall we see a total financing need of SEK 300-350m until cash flow break-even, of which we expect around SEK 100m to be raised in 2020, SEK 100m in 2021, and the remainder in 2022. This will probably be done through a mix of equity and debt. Given the uncertainty of the method of capital infusion, we have assumed debt financing in our balance sheet.

FCF and cash (ex-new financing) '19e-'25e



Source: ABG Sundal Collier, company data

Financing alternatives – SPV to finance the Glencore deal

We understand that Swedish Stirling is looking at the potential of creating a special purpose vehicle (SVP) that will finance the Glencore project. This would allow the SPV to purchase the PWR BLOKs from Swedish Stirling, and then operate the equipment at Glencore's site. It is likely that the SPV would be majority-owned (>50%) by Swedish Stirling, but with outside investors contributing equity or debt, or both. This would allow outside investors to invest in the project, and with increasing ESG awareness and low interest rates, we believe a project like this could be attractive. In our estimates we have consolidated 100% of revenues, but only 51% of EBIT. In our view this is a one-time solution to fund the Glencore project, and we assume that Swedish Stirling will sell equipment directly to customers in future projects, without funding requirements.

Valuation range SEK 8-19 per share

We have based our valuation range of SEK 8-19 per share on a DCF approach, where we value the cash flows during '20e-'29e using a WACC of 12%. On top of that we have assumed an "exit" P/E multiple of 15x that we apply to a "normalised" earnings level in 2030, then discounted back using the 12% WACC.

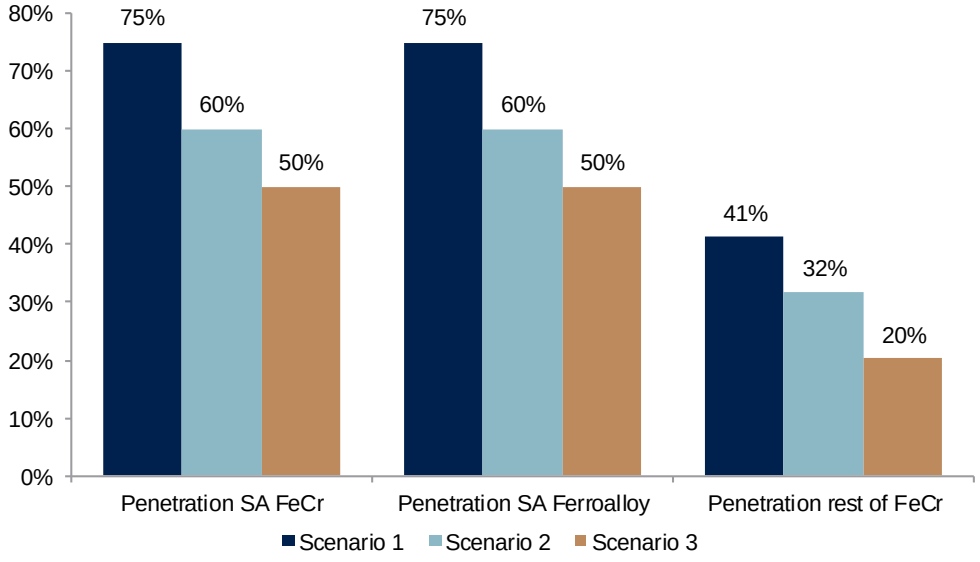
Valuation range SEK 8-19 per share (assuming dilution from 2017 convertible)

Scenario 1		Scenario 2		Scenario 3	
No. Of PWR BLK acc.	1,150	No. Of PWR BLK acc.	900	No. Of PWR BLK acc.	650
Total sales CAGR	34.6%	Total sales CAGR	30.2%	Total sales CAGR	24.7%
Ebit margin 27-32	20.0%	Ebit margin 27-32	21.1%	Ebit margin 27-32	18.0%
Wacc	12.0%	Wacc	12.0%	Wacc	12.0%
Exit multiple (P/E)	15.0x	Exit multiple (P/E)	15.0x	Exit multiple (P/E)	15.0x
No of shares (m)	85.2	No of shares (m)	85.2	No of shares (m)	85.2
Value per Share	19	Value per share	13	Value per share	8

Source: ABG Sundal Collier, company data

In the most optimistic scenario (1) we assume an accumulated sales volume of 1,150 PWR BLOKs between 2020 and 2030, while scenario 2 and 3 assume 900 units and 650 units respectively. In these scenarios we assume that Swedish Stirling is only able to sell to the ferrochrome industry globally, as well as entering the ferroalloy industry in South Africa only. Given the significant opportunities outside of these markets, we think we have been fairly conservative in our assumptions.

Market penetration assumptions different scenarios (by 2030)



Source: ABG Sundal Collier, company data

Highly sensitive to input variables

The valuation is of course very sensitive to the input variables. At this stage, when the technology is relatively unproven, but when Swedish Stirling has been able to contract a tier-1 customer like Glencore, we have chosen to use a WACC of 12%. However, as the company develops, we think that the risk premium will gradually decline.

Scenario 2 – WACC and exit multiple sensitivity

		Exit multiple				
		10.0x	**12.5x**	**15.0x**	**17.5x**	**20.0x**
Wacc	**10%**	11	13	16	18	21
	11%	10	12	14	17	19
	12%	9	11	13	15	17
	13%	8	10	12	14	16
	14%	7	9	11	13	14

Source: ABG Sundal Collier, company data

Appendix

Competing technologies – why the PWR BLOK is superior

We wish to highlight that the PWR BLOK is among the cheapest sources of electricity in the world, primarily driven by the fuel being free and with great availability. In addition, not only is the technology cheaper than solar and wind power, it also generates electricity from residual gases, which otherwise go to waste.

Another strength is the relative simplicity of the PWR BLOK. It does not require large quantities of land (or large quantities of PWR BLOKs) to add value. This is clearly a contrast compared with solar and wind, where installation is very complex, and commercial use requires large-scale installations to be profitable. However, we have described the competing technologies below, and how they compare with the PWR BLOK.

Gas engines

An alternative for generating electricity from residual gases is to use a gas engine. The gas engine is an internal combustion engine that is designed to use flammable gases as fuel (such as coal gas, biogas, and natural gas). Gas engines have the advantage of being able to run continuously at full load and are often used in heavy-duty industries. Therefore, in theory, this type of engine would be perfect to capture residual gases. However, as gas engines require internal combustion in order to transform thermal energy to mechanical, the engine wants a steady flow of gas with low variability in terms of quality. We understand that the PWR BLOK's main competitor GE Jenbacher, which uses technology based on gas engines, suffers from the inconsistent quality of the residual gases, with engine failure as a consequence. It is mainly because hydrogen levels become too high in the gas, meaning that the gas ignites when the piston is wrongly placed in the cycle. The gas itself is not the problem, but the highly volatile hydrogen levels are a major obstacle for the gas engine. This not an issue for the Stirling engine technology.

Steam engine

The steam engine is an external combustion engine, which means a working fluid is separated from the combustion. A steam engine is a heat engine that converts heat from the steam into mechanical energy. This makes it very similar to the Stirling engine. Just like any combustion engine, pressure is used to force a piston up and down to rotate the crank shaft. However, no combustion takes place as the pressure comes directly from the steam, and it is released to time the piston's position in order to have the perfect working cycle.

District heating

District heating is a more efficient solution compared with the PWR BLOK, since up to 70% of energy is wasted in the transformation from heat to electricity using the latter. However, if heat is transferred to water and later reused in district heating, very small transaction losses occur. District heating is established in the Nordics, for several reasons, but it is not established in emerging markets such as South Africa. Nor are there are plans or incentives to build it.

Potential competitors

We believe that the main competitors to the Swedish Stirling PWR BLOK are Jenbacher (owned by GE, gas-based engine technology) and Shengdong (a Chinese-based gas engine producer).

GE Jenbacher

The Jenbacher engine is designed to run solely on different types of gas for different types of applications. The Jenbacher engine has sold more than 50,000 units over the last 50 years. In general, gas engines are relatively efficient and are often used in industrial production, where they usually have a high degree of availability. Since they use internal combustion technology, they are very sensitive to the gas being used as fuel. The Jenbacher engine is often used in applications including natural gas, biogas, coal seam gases and associated petroleum gas. These gases are often very homogenous to their binding, making them easy to control. However, residual gases from ferrochrome production are known for being complex and inconsistent (a fact in residual gases), making it hard for the Jenbacher engine to work with when it comes to residual gases. As mentioned before, the hydrogen levels can vary dramatically, which causes infrequent ignition and risks engine failure. As far as we understand, Glencore has tried to work with Jenbacher engines previously, and the complex gas supply has generated issues that ultimately generated an engine failure.

Shengdong (Chinese product)

Shengdong offers a product similar to the Jenbacher, a gas engine that can run on various fuels. The company is the largest professional gas engine manufacturer in China, and has more than 30 years of experience. Its main business has expanded and is now focused on lowering customers' carbon emissions. However, we understand that Glencore has tried engines from Shengdong as well, but that the engine suffers from similar issues as the Jenbacher engine when it comes to varying hydrogen levels.

Risks

Technology risk
Swedish Stirling's product PWR BLOK is still not fully proven in the marketplace, which could result in additional development costs, and cause delivery delays.

Liquidity risk
Swedish Stirling will need access to financing in order to fund its growth. We see a funding gap of SEK 350m in total, of which we expect SEK 200m to come from equity in 2020-2021, with the remaining SEK 150m to come from debt financing in 2022.

Sales risk
Swedish Stirling is dependent on its PWR BLOK product, and its agreements with Glencore and Afarak Mogale. There is a risk that Afarak Mogale and/or Glencore may fail to meet their payment obligations. Furthermore, sales of approved and delivered products may also fail to meet market expectations, which could potentially dampen future sales levels.

Competition
Swedish Stirling operates in a competitive market subject to a rapid pace of development. While the PWR BLOK technology appears superior to other clean-tech technologies currently, product development and innovation may lead to a negative impact on this situation in the future.

Intellectual property estate
The company's competitive position and future revenues rely in part on its ability to protect future potential intellectual property rights and know-how. Swedish Stirling has three ongoing patent applications related to its technology.

Dependence on suppliers
In the production of Swedish Stirling's products, the company collaborates with a number of suppliers. There is a risk that those suppliers may raise prices, change terms, or that delivery difficulties may occur. This may lead to delays of revenues or higher costs than expected.

Board and management overview

Shareholders representing c. 66% of the outstanding shares are represented on the Board of Directors. In addition, several of the board members own convertibles in the company. The CEO Gunnar Larsson owns 2m shares through a company, while he also holds 250 options that gives the right to 10,000 shares each, giving him another 2.5m shares upon conversion.

Board and management overview

Position	Name	Since	Other positions/previous experience	Shares (m)	% of total shares
Chairman of the Board	Sven Sahle	2015	Chairman of the board of Dagny Board member at SIA Hank Rearden (LV)	28.3	35.6%
Member of the Board	Andreas Ahlström	2013	CEO of AC Cleantech Oy Board member of the board at Scandinavian Biog	13.4	16.9%
Member of the Board	Erik Wigertz	2019	CEO East Guardian Asset Management	10.1	12.8%
Member of the Board	Ulf Grundemark	2010	Chairman Nordic Waterproofing Vice Chairman Solargroup AS	0.4	0.5%
Member of the Board	Benedict Morgan	2017	Board member AQ Group, GUMACO, etc -	0.1	0.1%
Member of the Board	Gunilla Spongh	2018	Board member AQ Group, Momentum Group, etc	-	
CEO & Founder	Gunnar Larsson	2009	Previously CEO of Saab Kockums	2.0	2.5%
CFO	Heléne Öqvist	2019	Previously CFO Volvo Penta Americas	-	
CTO	Heije Westberg	2018	Previously CTO Minesto AB, Ph.D., Chalmers	-	
CCO	Sven Ljungberg	2018	Previously Head of Communications Skandia	-	

Source: ABG Sundal Collier, company data

The share and ownership structure

The share has been listed on the Nordic Growth Market (NGM) in Sweden since November 2016. It is also listed at Börse Stuttgart in Germany, since November 2017. The total number of outstanding shares is 79.5m. There are three convertibles and an options program. The total diluted number of shares amounts to 103m, assuming full conversion of the convertibles and subscription of the option programme.

- The first convertible was done in 2017, with a strike price of SEK 4.40 per share, and expires on 30 November 2019. If fully converted it adds c. 5.7m shares and dilutes the outstanding shares by c. 7%.
- The second and third convertibles were both completed in 2019, with expiry in 2021. The strike prices are SEK 10 per share, and at full conversion would add c. 13.3m shares in total (c. 17% dilution).
- The option programme was introduced in 2014, with strike between 1 November 2017 and 31 October 2021. The strike price is SEK 2.30 per share. If fully used it can add to the number of outstanding shares by 4.6m shares, or c 6%.

Top 10 shareholders

Owner	Shares	Capital
Sven Sahle	28,327,025	36%
AC Cleantech Grow th Fund I Holding AB	11,076,250	14%
East Guardian Asset Management AG	10,140,000	13%
Miura Holding Ltd	6,640,942	8%
Gunnar Inge Larsson	2,000,000	3%
Oy H. Kuningas & Co Ab	1,300,000	2%
Graphite Energy Pty Ltd	1,100,000	1%
Avanza Pension	1,369,310	2%
Nordnet Pensionsförsäkring	1,320,964	2%
Ulf Gundemark	507,000	1%

Source: ABG Sundal Collier, company data, Holdings

Annual income statement 2018-2030e

	2018	2019e	2020e	2021e	2022e	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e
Sales	58	42	70	76	207	450	731	822	913	1,004	1,222	1,410	1,528
PWR BLOK units	0	1	7	9	21	50	75	85	95	105	130	155	168
ASP (EUR '000)	0	600	600	600	750	750	850	850	850	850	850	850	850
Gross profit	15	23	30	24	71	109	233	299	374	411	493	564	611
Gross margin	26%	55%	43%	32%	34%	24%	32%	36%	41%	41%	40%	40%	40%
Opex	-73	-50	-67	-77	-89	-100	-167	-169	-171	-188	-229	-264	-287
Opex to sales	-126%	-117%	-95%	-103%	-43%	-22%	-23%	-21%	-19%	-19%	-19%	-19%	-19%
EBIT	-15	-26	-37	-53	-18	9	66	130	203	222	264	300	324
EBIT margin	-26%	-62%	-52%	-70%	-9%	2%	9%	16%	22%	22%	22%	21%	21%
Net financials	-4	-20	-13	-18	-33	-69	-59	-49	-39	-39	-39	-10	-10
Pretax profit	-19	-46	-50	-71	-51	-60	7	81	164	183	225	290	314
Tax	0	0	0	0	0	0	0	0	0	-27	-49	-64	-69
Net profit	-19	-47	-50	-71	-51	-60	7	81	164	155	175	226	245
EPS	-0.24	-0.59	-0.63	-0.90	-0.65	-0.75	0.09	1.02	2.06	1.95	2.20	2.85	3.08
EPS fully diluted	-0.19	-0.45	-0.49	-0.69	-0.50	-0.58	0.07	0.79	1.59	1.51	1.70	2.19	2.38

Source: ABG Sundal Collier, company data

Balance sheet & Cash flow 2018-2030e

Balance sheet	**2018**	**2019e**	**2020e**	**2021e**	**2022e**	**2023e**	**2024e**	**2025e**	**2026e**	**2027e**	**2028e**	**2029e**	**2030e**
Intangible assets	275	317	377	377	377	377	377	377	377	377	377	377	377
Tangible assets	3	3	3	3	7	14	26	37	43	50	58	68	77
Inventory	32	42	46	42	62	67	88	82	91	100	122	141	153
Receivables	4	6	7	8	21	54	88	99	110	120	147	169	183
Cash & cash equivalents	30	43	30	60	141	72	56	134	285	428	579	783	1,010
Total assets	**345**	**412**	**464**	**490**	**608**	**585**	**634**	**729**	**906**	**1,075**	**1,283**	**1,538**	**1,801**
Equity	276	253	203	132	80	21	28	109	273	428	604	830	1,075
Long-term debt	25	137	237	337	487	487	487	487	487	487	487	487	487
Short term debt	17	13	14	11	31	67	110	123	137	151	183	211	229
Other short term debt	27	10	10	10	10	10	10	10	10	10	10	10	10
Total Equity & Liabilities	**345**	**412**	**464**	**490**	**608**	**585**	**634**	**729**	**906**	**1,075**	**1,283**	**1,538**	**1,801**
Cash flow	**2018**	**2019e**	**2020e**	**2021e**	**2022e**	**2023e**	**2024e**	**2025e**	**2026e**	**2027e**	**2028e**	**2029e**	**2030e**
EBITDA	-14	-24	-35	-51	-15	10	69	136	211	231	274	311	338
Net financial items	-4	-20	-13	-18	-33	-69	-59	-49	-39	-39	-39	-10	-10
Paid tax	0	0	0	0	0	0	0	0	0	-27	-49	-64	-69
Non cash items	0	0	0	0	0	0	0	0	0	0	0	0	0
Change in WC	-19	-16	-3	1	-14	-2	-12	8	-6	-6	-15	-13	-8
Operating CF	-37	-61	-51	-68	-62	-60	-2	95	165	158	170	225	250
Capex	-61	-43	-62	-2	-6	-9	-15	-16	-14	-15	-18	-21	-23
Acqusitions/disposals	0	0	0	0	0	0	0	0	0	0	0	0	0
Free cash flow	**-98**	**-104**	**-113**	**-70**	**-68**	**-69**	**-16**	**78**	**151**	**143**	**152**	**204**	**227**
Dividend paid	0	0	0	0	0	0	0	0	0	0	0	0	0
Share issues	0	0	0	0	0	0	0	0	0	0	0	0	0
Other non cash items	0	-15	0	0	0	0	0	0	0	0	0	0	0
Net borrowing	0	133	100	100	150	0	0	0	0	0	0	0	0
Change in cash	-98	14	-13	30	82	-69	-16	78	151	143	152	204	227

Source: ABG Sundal Collier, company data

Income Statement (SEKm)	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019e	Q4 2019e
Sales	14	16	14	15	8	12	10	12
COGS	-11	-12	-11	-10	-3	-4	-5	-6
Gross profit	3	4	3	5	5	8	4	6
Other operating items	-6	-6	-6	-11	-13	-13	-8	-14
EBITDA	**-3**	**-2**	**-3**	**-6**	**-8**	**-5**	**-3**	**-8**
Depreciation and amortisation	-0	-0	-0	-0	-0	-0	-0	-0
EBITA	**-3**	**-2**	**-3**	**-6**	**-8**	**-5**	**-4**	**-9**
EO items	0	0	0	0	0	0	0	0
Impairment and PPA amortisation	0	0	0	0	0	0	0	0
EBIT	**-3**	**-2**	**-3**	**-6**	**-8**	**-5**	**-4**	**-9**
Net financial items	-2	-2	-1	-2	-4	-6	-7	-3
Pretax profit	**-5**	**-4**	**-4**	**-8**	**-12**	**-12**	**-11**	**-12**
Tax	0	0	0	0	0	0	0	0
Net profit	**-5**	**-4**	**-4**	**-8**	**-12**	**-12**	**-11**	**-12**
Minority interest	0	0	0	0	0	0	0	0
Net profit discontinued	0	0	0	0	0	0	0	0
Net profit to shareholders	**-5**	**-4**	**-4**	**-8**	**-12**	**-12**	**-11**	**-12**
EPS	-0.06	-0.05	-0.05	-0.10	-0.16	-0.14	-0.13	-0.15
EPS Adj	-0.06	-0.05	-0.05	-0.10	-0.16	-0.14	-0.13	-0.15
Total extraordinary items after tax	0	0	0	0	0	0	0	0
Tax rate (%)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Gross margin (%)	*22.3*	*24.6*	*22.5*	*36.4*	*58.6*	*66.5*	*43.3*	*50.0*
EBITDA margin (%)	*-24.5*	*-11.6*	*-22.4*	*-37.6*	*-95.9*	*-41.0*	*-36.2*	*-66.6*
EBITA margin (%)	*-25.0*	*-12.8*	*-23.3*	*-38.8*	*-100.7*	*-44.5*	*-41.2*	*-69.8*
EBIT margin (%)	*-25.0*	*-12.8*	*-23.3*	*-38.8*	*-100.7*	*-44.5*	*-41.2*	*-69.8*
Pretax margin (%)	*-36.0*	*-22.3*	*-28.2*	*-53.1*	*-150.3*	*-93.5*	*-109.8*	*-96.8*
Net margin (%)	*-36.0*	*-22.3*	*-28.2*	*-53.1*	*-150.3*	*-93.5*	*-109.8*	*-96.8*
Growth rates Y/Y	**Q1 2018**	**Q2 2018**	**Q3 2018**	**Q4 2018**	**Q1 2019**	**Q2 2019**	**Q3 2019e**	**Q4 2019e**
Sales growth (%)	*na*	*na*	*na*	*na*	*-39.2*	*-24.1*	*-29.3*	*-17.7*
EBITDA growth (%)	*na*	*na*	*na*	*na*	*-chg*	*-chg*	*-chg*	*-chg*
EBIT growth (%)	*na*	*na*	*na*	*na*	*-chg*	*-chg*	*-chg*	*-chg*
Net profit growth (%)	*na*	*na*	*na*	*na*	*-chg*	*-chg*	*-chg*	*-chg*
EPS growth (%)	*na*	*na*	*na*	*na*	*-chg*	*-chg*	*-chg*	*-chg*
Adj earnings numbers	**Q1 2018**	**Q2 2018**	**Q3 2018**	**Q4 2018**	**Q1 2019**	**Q2 2019**	**Q3 2019e**	**Q4 2019e**
EBITDA Adj	-3	-2	-3	-6	-8	-5	-3	-8
EBITDA Adj margin (%)	*-24.5*	*-11.6*	*-22.4*	*-37.6*	*-95.9*	*-41.0*	*-36.2*	*-66.6*
EBITA Adj	-3	-2	-3	-6	-8	-5	-4	-9
EBITA Adj margin (%)	*-25.0*	*-12.8*	*-23.3*	*-38.8*	*-100.7*	*-44.5*	*-41.2*	*-69.8*
EBIT Adj	-3	-2	-3	-6	-8	-5	-4	-9
EBIT Adj margin (%)	*-25.0*	*-12.8*	*-23.3*	*-38.8*	*-100.7*	*-44.5*	*-41.2*	*-69.8*
Pretax profit Adj	-5	-4	-4	-8	-12	-12	-11	-12
Net profit Adj	-5	-4	-4	-8	-12	-12	-11	-12
Net profit to shareholders Adj	-5	-4	-4	-8	-12	-12	-11	-12
Net Adj margin (%)	*-36.0*	*-22.3*	*-28.2*	*-53.1*	*-150.3*	*-93.5*	*-109.8*	*-96.8*

Source: ABG Sundal Collier, Company data

Income Statement (SEKm)	2012	2013	2014	2015	2016	2017	2018	2019e	2020e	2021e
Sales	0	2	3	1	21	34	58	42	70	76
COGS	0	-1	-0	-5	-13	-23	-43	-19	-40	-51
Gross profit	0	1	3	-4	9	11	15	23	30	24
Other operating items	0	-5	-6	-5	-17	-16	-29	-48	-66	-75
EBITDA	**0**	**-4**	**-3**	**-10**	**-8**	**-5**	**-15**	**-25**	**-35**	**-51**
Depreciation and amortisation	0	-1	-1	-1	-0	-0	-0	-2	-2	-2
Of which leasing depreciation	0	0	0	0	0	0	0	0	0	0
EBITA	**0**	**-5**	**-5**	**-10**	**-8**	**-5**	**-15**	**-26**	**-37**	**-53**
EO items	0	0	0	0	0	0	0	0	0	0
Impairment and PPA amortisation	0	0	0	0	0	0	0	0	0	0
EBIT	**0**	**-5**	**-5**	**-10**	**-8**	**-5**	**-15**	**-26**	**-37**	**-53**
Net financial items	0	0	-1	-5	0	-0	-4	-20	-13	-18
Pretax profit	**0**	**-5**	**-6**	**-15**	**-8**	**-6**	**-19**	**-46**	**-50**	**-71**
Tax	0	0	0	0	0	0	0	-0	0	0
Net profit	**0**	**-5**	**-6**	**-15**	**-8**	**-6**	**-19**	**-47**	**-50**	**-71**
Minority interest	0	0	0	0	0	0	0	0	0	0
Net profit discontinued	0	0	0	0	0	0	0	0	0	0
Net profit to shareholders	**0**	**-5**	**-6**	**-15**	**-8**	**-6**	**-19**	**-47**	**-50**	**-71**
EPS	0	0	-0.08	-0.19	-0.10	-0.07	-0.24	-0.59	-0.63	-0.90
EPS Adj	*0*	*0*	*-0.08*	*-0.19*	*-0.10*	*-0.07*	*-0.24*	*-0.59*	*-0.63*	*-0.90*
Total extraordinary items after tax	0	0	0	0	0	0	0	0	0	0
Leasing payments	0	0	0	0	0	0	0	0	0	0
Tax rate (%)	*ns*	*0*	*0*	*0*	*0*	*0*	*0*	*1.1*	*0*	*0*
Gross margin (%)	*nm*	*58.8*	*90.8*	*-415.9*	*41.0*	*31.4*	*25.6*	*55.0*	*43.2*	*32.3*
EBITDA margin (%)	*nm*	*-225.9*	*-116.7*	*-948.7*	*-37.2*	*-14.9*	*-24.9*	*-58.0*	*-49.8*	*-67.5*
EBITA margin (%)	*nm*	*-312.9*	*-163.1*	*-1,019.4*	*-38.4*	*-15.1*	*-25.6*	*-62.1*	*-52.1*	*-70.2*
EBIT margin (%)	*nm*	*-312.9*	*-163.1*	*-1,019.4*	*-38.4*	*-15.1*	*-25.6*	*-62.1*	*-52.1*	*-70.2*
Pretax margin (%)	*nm*	*-306.2*	*-211.3*	*-1,499.2*	*-38.4*	*-16.3*	*-32.8*	*-109.2*	*-70.9*	*-94.6*
Net margin (%)	*nm*	*-306.2*	*-211.3*	*-1,499.2*	*-38.4*	*-16.3*	*-32.8*	*-110.4*	*-70.9*	*-94.6*
Growth rates Y/Y	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019e**	**2020e**	**2021e**
Sales growth (%)	*na*	*na*	*73.3*	*-64.1*	*1,965.4*	*60.0*	*71.4*	*-27.2*	*65.9*	*7.2*
EBITDA growth (%)	*na*	*high*	*10.5*	*-192.1*	*18.9*	*35.9*	*-185.6*	*-69.9*	*-42.4*	*-45.2*
EBIT growth (%)	*na*	*high*	*9.7*	*-124.5*	*22.1*	*37.2*	*-190.5*	*-76.7*	*-39.2*	*-44.5*
Net profit growth (%)	*na*	*high*	*-19.6*	*-154.9*	*47.0*	*32.3*	*-245.6*	*-145.1*	*-6.6*	*-42.8*
EPS growth (%)	*na*	*na*	*high*	*-154.9*	*47.0*	*32.3*	*-245.6*	*-145.1*	*-6.6*	*-42.8*
Profitability	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019e**	**2020e**	**2021e**
ROE (%)	*nm*	*-8.0*	*-4.8*	*-12.1*	*-4.8*	*-2.2*	*-6.7*	*-17.7*	*-21.9*	*-42.7*
ROE Adj (%)	*nm*	*-8.0*	*-4.8*	*-12.1*	*-4.8*	*-2.2*	*-6.7*	*-17.7*	*-21.9*	*-42.7*
ROCE (%)	*nm*	*-7.2*	*-3.4*	*-7.7*	*-4.6*	*-1.9*	*-4.6*	*-7.3*	*-8.6*	*-11.4*
ROCE Adj(%)	*nm*	*-7.2*	*-3.4*	*-7.7*	*-4.6*	*-1.9*	*-4.6*	*-7.3*	*-8.6*	*-11.4*
ROIC (%)	*na*	*-7.5*	*-3.3*	*-6.6*	*-4.6*	*-2.5*	*-5.5*	*-7.8*	*-9.2*	*-12.3*
ROIC Adj (%)	*na*	*-7.5*	*-3.3*	*-6.6*	*-4.6*	*-2.5*	*-5.5*	*-7.8*	*-9.2*	*-12.3*
Adj earnings numbers	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019e**	**2020e**	**2021e**
EBITDA Adj	0	-4	-3	-10	-8	-5	-15	-25	-35	-51
EBITDA Adj margin (%)	*nm*	*-225.9*	*-116.7*	*-948.7*	*-37.2*	*-14.9*	*-24.9*	*-58.0*	*-49.8*	*-67.5*
EBITDA lease Adj	0	-4	-3	-10	-8	-5	-15	-25	-35	-51
EBITDA lease Adj margin (%)	*nm*	*-225.9*	*-116.7*	*-948.7*	*-37.2*	*-14.9*	*-24.9*	*-58.0*	*-49.8*	*-67.5*
EBITA Adj	0	-5	-5	-10	-8	-5	-15	-26	-37	-53
EBITA Adj margin (%)	*nm*	*-312.9*	*-163.1*	*-1,019.4*	*-38.4*	*-15.1*	*-25.6*	*-62.1*	*-52.1*	*-70.2*
EBIT Adj	0	-5	-5	-10	-8	-5	-15	-26	-37	-53
EBIT Adj margin (%)	*nm*	*-312.9*	*-163.1*	*-1,019.4*	*-38.4*	*-15.1*	*-25.6*	*-62.1*	*-52.1*	*-70.2*
Pretax profit Adj	0	-5	-6	-15	-8	-6	-19	-46	-50	-71
Net profit Adj	0	-5	-6	-15	-8	-6	-19	-47	-50	-71
Net profit to shareholders Adj	0	-5	-6	-15	-8	-6	-19	-47	-50	-71
Net Adj margin (%)	nm	-306.2	-211.3	-1,499.2	-38.4	-16.3	-32.8	-110.4	-70.9	-94.6

Source: ABG Sundal Collier, Company data

Cash Flow Statement (SEKm)	2012	2013	2014	2015	2016	2017	2018	2019e	2020e	2021e
EBITDA	0	-4	-3	-10	-8	-5	-15	-25	-35	-51
Net financial items	0	0	-1	-5	0	-0	-4	-20	-13	-18
Paid tax	0	0	0	0	0	0	0	-0	0	0
Non-cash items	0	4	-6	4	-4	1	0	0	0	0
Cash flow before change in WC	0	0	-11	-11	-12	-4	-19	-45	-48	-69
Change in WC	0	-3	1	-1	1	-6	-28	-12	-4	4
Operating cash flow	**0**	**-3**	**-10**	**-12**	**-12**	**-10**	**-37**	**-61**	**-51**	**-68**
CAPEX tangible fixed assets	0	na	na	na	na	-32	-61	-43	-62	-2
CAPEX intangible fixed assets	0	0	0	0	0	0	0	0	0	0
Acquisitions and disposals	0	0	0	0	0	0	0	0	0	0
Free cash flow	**0**	**na**	**na**	**na**	**na**	**-42**	**-98**	**-104**	**-113**	**-70**
Dividend paid	0	0	0	0	0	0	0	0	0	0
Share issues and buybacks	0	0	0	0	0	0	0	0	0	0
Other non cash items	0	0	0	0	0	90	-10	28	-1	3
Decrease in net IB debt	**0**	**na**	**na**	**na**	**na**	**48**	**-81**	**-93**	**-114**	**-68**

Balance Sheet (SEKm)	2012	2013	2014	2015	2016	2017	2018	2019e	2020e	2021e
Goodwill	0	0	0	0	0	0	0	0	0	0
Other intangible assets	0	132	144	166	186	218	275	317	377	377
Tangible fixed assets	0	2	1	0	0	0	3	3	3	3
Right-of-use asset	0	0	0	0	0	0	0	0	0	0
Total other fixed assets	0	0	0	0	0	0	0	0	0	0
Fixed assets	0	135	145	166	186	218	279	320	380	381
Inventories	0	1	1	1	1	3	32	42	46	42
Receivables	0	2	1	2	1	5	4	6	7	8
Other current assets	0	0	0	0	0	0	0	0	0	0
Cash and liquid assets	0	3	4	1	27	102	30	43	30	60
Total assets	**0**	**141**	**151**	**170**	**216**	**328**	**345**	**412**	**464**	**490**
Shareholders equity	0	127	124	130	210	296	276	253	203	132
Minority	0	0	0	0	0	0	0	0	0	0
Total equity	**0**	**127**	**124**	**130**	**210**	**296**	**276**	**253**	**203**	**132**
Long-term debt	0	0	0	0	0	25	25	137	237	337
Pension debt	0	0	0	0	0	0	0	0	0	0
Convertible debt	0	0	0	0	0	0	0	0	0	0
Leasing liability	0	0	0	0	0	0	0	0	0	0
Total other long-term liabilities	0	0	0	0	0	0	0	0	0	0
Short-term debt	0	13	7	11	6	7	17	13	14	11
Accounts payable	0	0	0	0	0	0	0	0	0	0
Other current liabilities	0	0	20	30	0	0	27	10	10	10
Total liabilities and equity	**0**	**141**	**151**	**170**	**216**	**328**	**345**	**412**	**464**	**490**
Net IB debt	0	11	3	9	-21	-69	13	106	220	288
Net IB debt excl. pension debt	0	11	3	9	-21	-69	13	106	220	288
Net IB debt excl. leasing	0	11	3	9	-21	-69	13	106	220	288
Capital invested	0	138	147	169	188	227	315	369	433	430
Working capital	0	3	2	3	2	8	37	49	53	49

EV breakdown	2012	2013	2014	2015	2016	2017	2018	2019e	2020e	2021e
Market cap. diluted (m)	na	na	na	na	231	727	795	763	763	763
Net IB debt Adj	0	11	3	9	-21	-69	13	106	220	288
Market value of minority	0	0	0	0	0	0	0	0	0	0
Reversal of shares and participations	0	0	0	0	0	0	0	0	0	0
Reversal of conv. debt assumed equity	0	0	0	0	0	0	0	0	0	0
EV	**na**	**na**	**na**	**na**	**210**	**659**	**808**	**869**	**983**	**1,051**

Capital efficiency	2012	2013	2014	2015	2016	2017	2018	2019e	2020e	2021e
Total assets turnover (%)	*nm*	*2.3*	*2.0*	*0.6*	*11.0*	*12.5*	*17.3*	*11.2*	*16.1*	*15.8*
Working capital/sales (%)	*nm*	*102.5*	*95.4*	*234.2*	*11.6*	*15.5*	*38.5*	*100.5*	*72.2*	*67.5*

Financial risk and debt service	2012	2013	2014	2015	2016	2017	2018	2019e	2020e	2021e
Net debt/equity	*nm*	*0.08*	*0.03*	*0.07*	*-0.10*	*-0.23*	*0.05*	*0.42*	*1.08*	*2.19*
Net debt/market cap	*na*	*na*	*na*	*na*	*-0.08*	*-0.24*	*0.02*	*0.14*	*0.29*	*0.38*
Equity ratio (%)	*nm*	*90.4*	*82.2*	*76.4*	*97.1*	*90.0*	*80.0*	*61.4*	*43.8*	*26.9*
Net IB debt adj./equity	*nm*	*0.08*	*0.03*	*0.07*	*-0.10*	*-0.23*	*0.05*	*0.42*	*1.08*	*2.19*
Current ratio	*nm*	*0.46*	*0.23*	*0.10*	*4.80*	*14.56*	*1.52*	*4.07*	*3.46*	*5.11*
EBITDA/net interest	*na*	*-34.02*	*-2.42*	*-1.98*	*-7,922.00*	*-12.63*	*-3.44*	*-1.23*	*-2.64*	*-2.77*
Net IB debt/EBITDA	*nm*	*-2.86*	*-0.99*	*-0.95*	*2.68*	*13.55*	*-0.86*	*-4.29*	*-6.27*	*-5.65*
Net IB debt/EBITDA lease Adj	*nm*	*-2.86*	*-0.99*	*-0.95*	*2.68*	*13.55*	*-0.86*	*-4.29*	*-6.27*	*-5.65*
Interest cover	*nm*	*-3,059.42*	*-3.38*	*-2.12*	*nm*	*-12.78*	*-3.54*	*-1.31*	*-2.76*	*-2.88*

Source: ABG Sundal Collier, Company data

Valuation and Ratios (SEKm)	2012	2013	2014	2015	2016	2017	2018	2019e	2020e	2021e
Shares outstanding adj.	0	0	80	80	80	80	80	80	80	80
Fully diluted shares Adj	0	0	80	80	80	80	80	80	80	80
EPS	0	0	-0.08	-0.19	-0.10	-0.07	-0.24	-0.59	-0.63	-0.90
Dividend per share Adj	0	0	0	0	0	0	0	0	0	0
EPS Adj	0	0	-0.08	-0.19	-0.10	-0.07	-0.24	-0.59	-0.63	-0.90
BVPS	0	0	1.56	1.63	2.64	3.72	3.47	3.18	2.56	1.66
BVPS Adj	0	0	-0.25	-0.45	0.30	0.98	0.01	-0.81	-2.19	-3.09
Net IB debt / share	na	na	0.0	0.1	-0.3	-0.9	0.2	1.3	2.8	3.6
Share price	na	na	na	na	2.91	9.15	10.00	9.60	9.60	9.60
Market cap. (m)	na	na	na	na	231	727	795	763	763	763
Valuation	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019e**	**2020e**	**2021e**
P/E	na	na	na	na	-28.2	-131.3	-41.5	-16.3	-15.3	-10.7
EV/sales	na	na	na	na	9.86	19.35	13.84	20.45	13.95	13.92
EV/EBITDA	na	na	na	na	-26.5	-129.7	-55.7	-35.3	-28.0	-20.6
EV/EBITA	na	na	na	na	-25.6	-128.2	-54.1	-33.0	-26.8	-19.8
EV/EBIT	na	na	na	na	-25.6	-128.2	-54.1	-33.0	-26.8	-19.8
Dividend yield (%)	*na*	*na*	*na*	*na*	*0*	*0*	*0*	*0*	*0*	*0*
FCF yield (%)	*na*	*na*	*na*	*na*	*0*	*-5.8*	*-12.3*	*-13.7*	*-14.8*	*-9.2*
Lease adj. FCF yield (%)	*na*	*na*	*na*	*na*	*na*	*-5.8*	*-12.3*	*-13.7*	*-14.8*	*-9.2*
P/BVPS	na	na	na	na	1.10	2.46	2.88	3.02	3.76	5.80
P/BVPS Adj	na	na	na	na	9.77	9.38	1,402.13	-11.92	-4.39	-3.11
P/E Adj	na	na	na	na	-28.2	-131.3	-41.5	-16.3	-15.3	-10.7
EV/EBITDA Adj	na	na	na	na	-26.5	-129.7	-55.7	-35.3	-28.0	-20.6
EV/EBITA Adj	na	na	na	na	-25.6	-128.2	-54.1	-33.0	-26.8	-19.8
EV/EBIT Adj	na	na	na	na	-25.6	-128.2	-54.1	-33.0	-26.8	-19.8
EV/cap. employed	na	na	na	na	1.0	2.0	2.5	2.2	2.2	2.2
Investment ratios	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019e**	**2020e**	**2021e**
Capex/sales	nm	na	na	na	na	94.0	104.3	101.2	88.1	3.0
Capex/depreciation	nm	na	na	na	na	55,160.3	14,552.9	2,505.8	3,882.2	110.0
Capex tangibles/tangible fixed assets	nm	na	na	na	na	12,797.2	1,936.1	1,592.2	1,931.8	66.2
Capex intangibles/definite intangibles	nm	0	0	0	0	0	0	0	0	0
Depreciation on intangibles/definite inta	nm	0	0	0	0	0	0	0	0	0
Depreciation on tangibles/tangibles	nm	59.5	126.8	202.6	248.5	23.2	13.3	63.5	49.8	60.2

Source: ABG Sundal Collier, Company data

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