



**Buy** (Initiation)

**Price target: EUR 100.00**

**Price:** EUR 27.60      **Next result:** Q4-19 tba  
**Bloomberg:** NB2 GR      **Market cap:** EUR 308.1 m  
**Reuters:** NB2.DE      **Enterprise Value:** EUR 318.6 m

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## Powering the digital gold rush

**There is a cure for COVID-19** – at least when it comes to undesired side effects outside of the human body. After all, the coronavirus threatened to break the internet when people rushed to adopt video conferencing tools amidst widespread lockdowns.

**The remedy is high-performance computing (HPC)**, a technology enabling complex data processing and simulations, which is seeing rapidly rising adoption in the fields of video rendering, artificial intelligence, and Blockchain applications, amongst other.

An expert for high-performance computing, Northern Data brings speed and power to these computing-intensive applications. **High competitive quality** is based on:

- **Scale** – Running the world's largest HPC data centre with 1GW capacity, Northern Data commands unrivalled procurement power for electricity
- **Geography** – Its location at a former aluminium plant site in energy-abundant Texas provides access to a vast energy infrastructure
- **Expertise** – As an early mover, the company has established unique know-how to dissipate heat and set-up high performance computing infrastructure at speed

All of this allows Northern Data to offer clients **hard-to-beat operating costs**, considering that electricity for cooling and operations is typically the single largest cost factor in high performance computing.

As a result, **clients are flocking to use its HPC platform** and even finance capex to secure capacity. Already, Northern has signed multi-year contracts with major customers, which yield **high visibility** on stellar growth in FY'20E, as shown by the guidance of € 120-140m sales and € 45-60m EBITDA (in-line).

Better yet, **a strong client pipeline** suggests there is more to come – we expect sales to reach € 474m by FY'22E modelling further clients wins, while EBITDA should rise to € 183m driven by the scalability of its AI-operated HPC platform.

Notably, management has ambitious plans to **scale to 3.6GW** by 2023E, and enough client interest for full utilisation. Flawless execution would yield >3x upside to our mid-term estimates, and positive news flow in this regard would trigger a re-rating well beyond our current fair value. **Initiate with BUY and a € 100 PT based on DCF.**

Y/E 31.12 (EUR m)	2018	2019E	2020E	2021E	2022E
Sales	2.5	9.4	134.3	394.9	473.9
Sales growth	n/a	269 %	1328 %	194 %	20 %
EBITDA	-4.9	-8.0	49.5	150.1	182.5
EBIT	-5.6	-8.6	44.5	139.9	171.1
Net income	-5.6	-9.3	28.7	96.1	118.7
Net debt	-3.0	10.5	5.2	-32.6	-112.1
Net gearing	417.2 %	-104.7 %	27.7 %	-28.4 %	-48.0 %
Net Debt/EBITDA	0.0	-1.3	0.1	0.0	0.0
EPS pro forma	-0.50	-0.84	2.57	8.61	10.64
CPS	-0.42	-0.72	14.34	3.78	7.61
DPS	0.00	0.00	0.00	0.00	0.00
Dividend yield	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Gross profit margin	-126.1 %	-70.0 %	44.5 %	44.6 %	44.6 %
EBITDA margin	-194.0 %	-85.5 %	36.9 %	38.0 %	38.5 %
EBIT margin	-218.5 %	-92.0 %	33.2 %	35.4 %	36.1 %
ROCE	817.9 %	-526.1 %	278.2 %	210.6 %	122.1 %
EV/sales	119.7	33.9	3.5	1.0	0.6
EV/EBITDA	-61.7	-39.6	9.4	2.7	1.6
EV/EBIT	-54.8	-36.8	10.4	2.9	1.7
PER	-55.1	-32.9	10.7	3.2	2.6
Adjusted FCF yield	-1.8 %	-2.7 %	7.0 %	24.6 %	40.6 %

Source: Company data, Hauck & Aufhäuser Close price as of: 17.03.2020



Source: Company data, Hauck & Aufhäuser

**High/low 52 weeks:** 41.60 / 10.30

**Price/Book Ratio:** -33.9

**Relative performance** (TecDAX):

3 months 68.3 %

6 months 157.7 %

12 months -

### Changes in estimates

		Sales	EBIT	EPS
2019	<b>old:</b>	9.4	-8.6	-0.84
	<b>Δ</b>	-	-	-
2020	<b>old:</b>	134.3	44.5	2.57
	<b>Δ</b>	-	-	-
2021	<b>old:</b>	394.9	139.9	8.61
	<b>Δ</b>	-	-	-

### Key share data:

Number of shares: (in m pcs) 11.2

Authorised capital: (in € m) -

Book value per share: (in €) -0.9

Ø trading volume: (12 months) 11,000

### Major shareholders:

Management	28.5 %
Singularity Capital AG	24.5 %
Cryptology Asset Group	16.7 %
Free Float	17.0 %
Krypto Ventures GmbH	6.7 %
Hashtrend AG	6.7 %

### Company description:

Expert for high-performance computing (HPC), operating the largest HPC data centre in the world

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## Company Background

**Northern Data is an expert for high performance computing.** The technology involves thousands of advanced processors working in parallel to process billions of pieces of data in real-time, offering multiple times the performance of a normal computer.

With this, Northern Data brings **speed and power to computing-intensive applications**, which are set to rise dramatically in the coming years. Potential use cases can be split into three groups:

- **Simulations** – These may include the airflow over a wing, combustion in an engine, or planetary weather systems.
- **Translational** – Rendering film or video in highest quality.
- **Analytical goals & Problem solving** – Calculating the ROI of an advertisement, or mining cryptocurrencies.

To satisfy the strong customer demand, Northern Data **is currently constructing the world's largest HPC data centre** in Texas, which will have a capacity of 1GW and span an area equal to 57 soccer fields.

The company has already signed up initial clients, which will **utilise 300MW+ of capacity**. Operations look set to start in March, and revenues are expected to **exceed € 100m already in FY'20E**, underpinned by management's initial guidance of € 120-140m sales.

An **excellent client pipeline** provides strong visibility that the full 1GW will be contracted before the end of 2021, which would put Northern Data on an annual revenue run rate in excess of € 400m, in our view. The company has ambitious plans to even scale the facility to 3.6GW by 2023 (not included in eH&A).

While it may seem counter-intuitive, Northern Data's **business model is capital-light**. Its clients have financed the data centre (€ 150m), and will pay for the hardware. Northern Data's competitive edge is not the capital employed. Rather, it is the **unique expertise** to scale and run these facilities at unbeatable operating costs.

## Northern Data AG

**Northern Data is an expert for high-performance computing.** It is set to launch its large-scale data centre with 1GW capacity in Texas before the end of Q1'20. The target is to ramp this to 3.6GW by FY'23 (*not incl. in eH&A*).

**Business model** **Revenue generation:** Northern Data sells computing power to its customers by the kWh. Multi-year contracts for 300MW+ at fixed prices have already been signed, **providing high visibility.**

Northern Data operates a capital-light business model, as clients pay for the computing hardware and finance the data centre superstructure, **reflecting the company's strong bargaining clout.**

**It is also personnel-light,** as Artificial Intelligence largely runs the data centre.

<b>Sales FY'20E (€ m)</b>	134
<b>EBITDA FY'20E</b>	50

**Market position & rivals** **Northern Data is seen as the market leader,** and set to operate the largest data centre for high-performance computing applications in the world. Rivals, especially in Asia, typically operate data centres with capacity of 40-80MW. The main competitors Bitmain (50MW) and Layer1 (100MW) are also smaller. Amazon and the likes **do not focus** on high-performance computing.

**Customers** **300MW+ has already been contracted by several customers.** Northern Data has a **strong client pipeline** to further accelerate growth in the coming years.

**Raw Materials & Suppliers** **Key input cost is electricity.** Thanks to scale and its location in Texas, Northern Data has access to lowest electricity costs. It has entered into a multi-year supply contract with Oncor Electric Delivery, **paying a low flat fee.** Note that clients pay for the computing hardware.

**Sales by region ('20)** More than 90% of revenues should be generated in the USA, less than 10% in Norway.

**Production sites** Its **large-scale data centre is located in Texas** (USA) with an initial capacity of 1GW, and plans to ramp this to 3.6GW. Northern also operates several high-performance computing containers in Norway.

Source: Company data, Hauck & Aufhäuser

## Quality

### High competitive quality is based on:

- **Expertise** – As an early mover, Northern Data has established unique know-how to dissipate heat and set-up high performance computing infrastructure at speed.

Its proprietary “chimney system” relies on a special design and specific materials to capture and channel the heat of 26,000 kilograms of hardware per chimney. This allows keeping the machines cool at all times, which is crucial to get the most out of the equipment. Hence, Northern Data is one of the few **capable of operating in very hot conditions**, such as in Texas.

### The chimney system in action

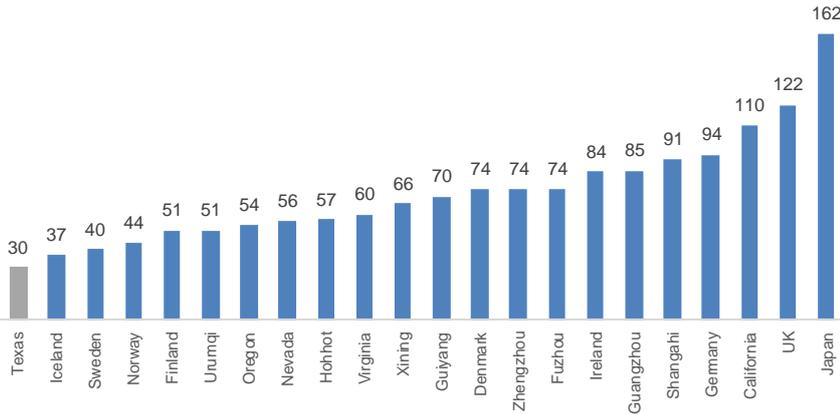


Source: Company data, Hauck & Aufhäuser

Meanwhile, Northern Data can set-up high-performance computing hardware **15-20x faster than rivals** thanks to proprietary AI, which automatically performs the steps needed to bring the hardware online. Running several ten thousand machines in its data centre, this edge yields substantial speed and cost benefits (e.g. fewer personnel needed).

- **Locational advantage** – Northern Data’s facility is located in Texas, which has some of the lowest energy prices in the world, thanks to a mixture of market deregulation, a natural gas abundance and heavy investments into renewables.

## Global energy prices: a comparison (€ / MWh)

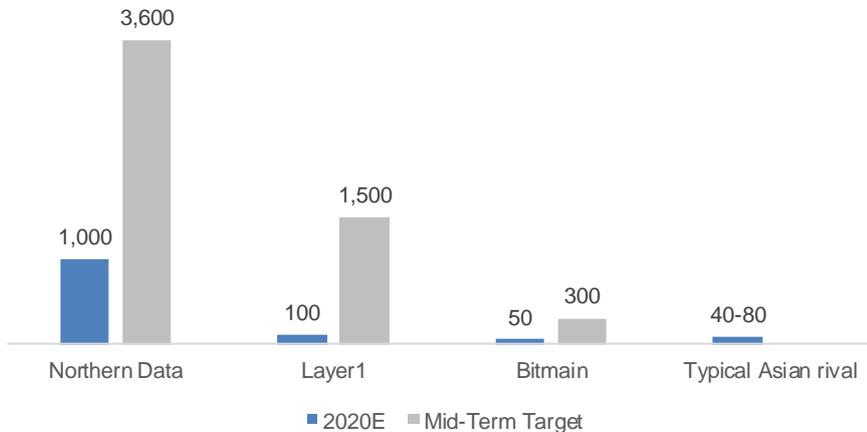


Source: Company data, Hauck & Aufhäuser

As well, the facility can tap into a **vast existing energy infrastructure**, being situated at the former site of a major aluminium plant. This is a key requisite to scale the data centre to the targeted 3.6GW in the coming years,

- **Scale** – With a capacity of 1GW initially and 3.6GW in the mid-term, **Northern Data looks set to command unrivalled scale**, giving rise to procurement clout, which allowed it to lock in lowest electricity prices for several years at a flat fee.

## Capacity (MW): Northern Data vs. Rivals



Source: Hauck & Aufhäuser

Note that amazon and the likes are **by-and-large not competing with Northern Data** as they do not focus on high-performance computing power in their data centres.

All of this combined allows Northern Data to offer its clients a **hard-to-beat operating cost advantage**, considering that in high performance computing, energy is the crucial cost factor for cooling and operations. This is perceived and valued by clients, as shown in the fact that:

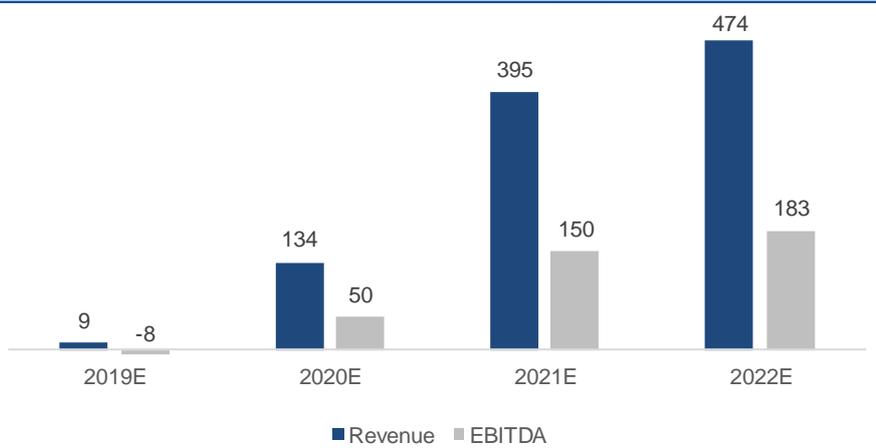
- Northern Data has signed multi-year contracts with fixed prices with its initial customers, **providing high visibility**.
- The initial customers are financing the data centre's superstructure (€ 150m) through pre-payments AND pay for the computing hardware (which

they own), **reflecting Northern Data's strong bargaining power**, especially considering that the data centre will pass into its ownership.

### Growth

High performance computing is **becoming ever more relevant in today's world**, where larger and larger amounts of data are constantly being generated. In fact, some 25 billion connected devices generate over two zettabytes of traffic every year. Potential applications include Machine Learning, Big Data Analytics, gaming, etc.

**Northern Data: Sales and EBITDA trend 2019-22E (€ m)**



Source: exclusively Hauck & Aufhäuser estimate

As a high-performance computing expert, Northern Data is expected to show **outstanding sales growth to € 474m by 2022E**, driven by:

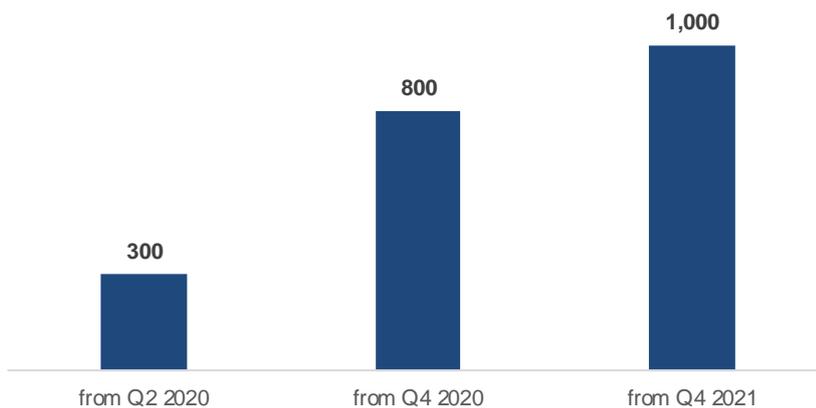
- **Ramping up existing clients:** Northern Data's initial customers will use its high-performance infrastructure for Blockchain applications. These clients have signed up for 300MW+, with fixed prices and multi-year contracts, providing excellent visibility.
- **Winning new clients:** A strong customer pipeline provides confidence that Northern Data can fill up the initial capacity of 1GW by FY'21E. Notably, the company should be in advanced negotiations with several large companies looking to sign up for a combined 500MW. We model additional customer wins by FY'21E yielding incremental demand for 700MW in total.

In sum, there is **strong visibility** that Northern Data will exceed the € 100m revenue threshold already this year, as reflected in the **company's guidance of € 120-140m sales and € 45-60m EBITDA**.

#### The revenue model assumptions in detail:

- **Customers:** 300MW capacity should be fully online by April 2020, yielding initial revenues in Q2'20. We expect additional customers for 500MW to start operations by Q4'20. Finally, further clients for 200MW are modelled to launch in Q4'21E.

## Expected trend in capacity utilisation (in MW)



Source: exclusively Hauck & Aufhäuser estimate

- **Pricing:** Northern Data is expected to charge its customers € 5.5 cents per kilowatt hour in 2020E (exclusively eH&A) for managing the high-performance computing infrastructure. Here, clients benefit from Northern Data's **expertise and scale**, which ensures operational excellence and best-in-class operating costs.

Northern Data: Revenue model 2020-22E			
	2020E	2021E	2022E
<b>I. Price (€ per kWh)</b>	<b>0.055</b>	<b>0.055</b>	<b>0.055</b>
Total capacity in MW - year end	1,000	1,000	1,000
Gross MW usage - year end	800	1,000	1,000
Gross MW usage - average	283	833	1,000
Gross kWh usage (million) - average	2,482	7,300	8,760
Six days downtime p.a. in kWh (million)	41	120	144
<b>II. Net kWh usage (million)</b>	<b>2,441</b>	<b>7,180</b>	<b>8,616</b>
<b>I. x II. Revenue (€ m)</b>	<b>134</b>	<b>395</b>	<b>474</b>

Source: exclusively Hauck & Aufhäuser estimate

Note that we derive gross kWh usage (average) by multiplying gross MW usage (average) by 365x (days), 24x (hours), and 1,000x (megawatt to kilowatt). Northern Data has the contractual right for **six days of downtime per year** to perform maintenance, which we fully reflect in our estimates.

**EBITDA is expected to increase strongly to € 183m by 2022E**, and the EBIT margin set to exceed 35%. Key bottom-line drivers:

- **Size and locational advantage to secure ultra-low electricity prices**, which is the largest cost factor. Northern Data is seen to have secured highly attractive electricity prices of € 3.00 cents per kWh (eH&A) for several years in advance. Accordingly, we expect a **fairly stable gross margin at a level of 45%** going forward.
- **Economies of scale to drive down fixed costs relatively to sales.** Northern Data's business model is personnel-light (75 employees in 2020E) as its data centre largely runs on artificial intelligence, suggesting fixed costs will be scaled with the rapidly rising top-line in the coming years.

Northern Data: Bottom-line trend 2020-22E			
	2020E	2021E	2022E
<b>Material costs</b>	<b>75</b>	<b>219</b>	<b>263</b>
in % of sales	55.5%	55.5%	55.5%
<b>Gross Profit</b>	<b>60</b>	<b>176</b>	<b>211</b>
Gross Profit margin	44.5%	44.6%	44.6%
<b>Fixed costs (less other income)</b>	<b>10.2</b>	<b>25.9</b>	<b>28.6</b>
in % of sales	7.6%	6.6%	6.0%
<b>EBITDA</b>	<b>50</b>	<b>150</b>	<b>183</b>
EBITDA margin	36.9%	38.0%	38.5%
<b>D&amp;A</b>	<b>5</b>	<b>10</b>	<b>11</b>
in % of sales	3.7%	2.6%	2.4%
<b>EBIT</b>	<b>45</b>	<b>140</b>	<b>171</b>
EBIT margin	33.2%	35.4%	36.1%
<b>Financial expenses</b>	<b>4</b>	<b>3</b>	<b>2</b>
<b>Taxes</b>	<b>12</b>	<b>41</b>	<b>51</b>
Tax rate	30%	30%	30%
<b>Net income</b>	<b>29</b>	<b>96</b>	<b>119</b>
Net margin	21.4%	24.3%	25.1%
<b>EPS</b>	<b>2.6</b>	<b>8.6</b>	<b>10.6</b>

Source: Hauck & Aufhäuser

**Net income is expected to soar to € 119m by 2022E**, benefitting from a capital-lean business model, with depreciation and amortization seen to remain well below 5% of revenues.

**Our estimates do not include Northern Data's goal to ramp the facility to 3.6GW by 2023E.** Assuming full utilisation and a price of € 5.5 cents per kilowatt hour, Northern Data could achieve approx. € 1.7bn revenues with this capacity, yielding substantial upside to our expectations.

## Valuation

The DCF model results in a price target of € 100 per share. Key model assumptions:

- Top-line growth:** We expect Northern Data to have several customers by the end of 2020 using a combined 1GW of capacity, which explains our highly dynamic growth estimates from 2019-22E. Its existing clients and strong customer pipeline **provide excellent visibility on short-term growth**. In the mid-term, we conservatively model approx. 2% sales growth to reflect the ongoing addition of small clients relying on the company's high-performance computing expertise. **Any major customer win would yield upside to our estimates**. The long-term growth rate is set at 2.0%.
- EBIT margins.** The scalable business model should allow for EBIT margins in excess of 35% by 2022E, which look defensible given high competitive quality based on scale, geography and expertise. Accordingly, we model approx. 35% EBIT margins in the long-term.
- WACC.** We model a weighted average cost of capital of 10.0% to reflect the still early stage of the business model, consisting of a 5.0% risk premium beta of 1.7x and 1.5% risk free rate.

DCF (EUR m) (except per share data and beta)	2020E	2021E	2022E	2023E	2024E	2025E	2026E	Terminal value
NOPAT	31	98	120	146	148	146	149	124
Depreciation	5	10	11	13	13	19	19	19
Increase/decrease in working capital	131	-54	-34	-28	-76	-1	-1	-1
Increase/decrease in I-term provisions & accruals	0	0	0	0	0	0	0	0
Capex	-160	-15	-17	-19	-20	-19	-19	-19
<b>Cash flow</b>	<b>8</b>	<b>40</b>	<b>81</b>	<b>112</b>	<b>66</b>	<b>146</b>	<b>148</b>	<b>123</b>
Present value	7	33	62	78	42	84	78	745
WACC	9.9%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%

DCF per share derived from		DCF avg. growth and earnings assumptions	
Total present value	1,129	Short term growth (2019-2022)	269%
thereof terminal value	66%	Medium term growth (2022 - 2026)	2%
Net debt (net cash) at start of year	11	Long term growth (2026 - infinity)	2%
Financial assets	0	Terminal year EBIT margin	35%
Provisions and off balance sheet debt	0		
Equity value	1,118		
No. of shares outstanding	11.2		
<b>Discounted cash flow per share</b>	<b>100</b>		
<b>upside/(downside)</b>	<b>245%</b>		

Share price		WACC derived from	
	<b>29.0</b>	Cost of borrowings before taxes	8.0%
		Tax rate	30.0%
		Cost of borrowings after taxes	8.0%
		Required return on invested capital	10.0%
		Risk premium	5.0%
		Risk-free rate	1.5%
		Beta	1.7

Sensitivity analysis DCF						Sensitivity analysis DCF							
WACC		Long term growth					WACC		EBIT margin terminal year				
		0%	1.0%	2.0%	2.5%	3.0%			31%	33%	35%	37%	39%
12.0%	71	75	80	83	86	12.0%	74	77	80	83	85		
11.0%	77	82	89	92	97	11.0%	82	85	89	92	95		
10.0%	85	92	100	105	111	10.0%	92	96	100	104	108		
9.0%	95	104	115	122	130	9.0%	106	111	115	120	125		
8.0%	108	120	136	146	158	8.0%	124	130	136	142	148		

Source: Company data, Hauck & Aufhäuser

The adjusted Free Cash Flow Yield results in a **fair value of € 80 per share based on 2021E and € 109 per share on 2022E**. It thus supports the DCF-based price target. Looking beyond 2020E seems justified considering that the full impact of the existing customers and highly likely customer wins will only be felt from 2021E onward.

Due to the fact that companies rarely bear sufficient resemblance to peers in terms of geographical exposure, size or competitive strength and in order to **adjust for the pitfalls of weak long term visibility**, an Adjusted Free Cash Flow analysis (Adjusted FCF) has been conducted.

The main driver of this model is the level of return available to a *controlling* investor, influenced by the cost of that investors' capital (opportunity costs) and the purchase price – in this case the enterprise value of the company.

Here, the adjusted FCF yield is used as a proxy for the required return and is defined as EBITDA less minority interest, taxes and investments required to maintain existing assets (maintenance capex).

Simply put, the model assumes that investors require companies to generate a minimum return on the investor's purchase price. The required after tax return equals the model's **hurdle rate of 10.0%**. Anything less suggests the stock is expensive; anything more suggests the stock is cheap.

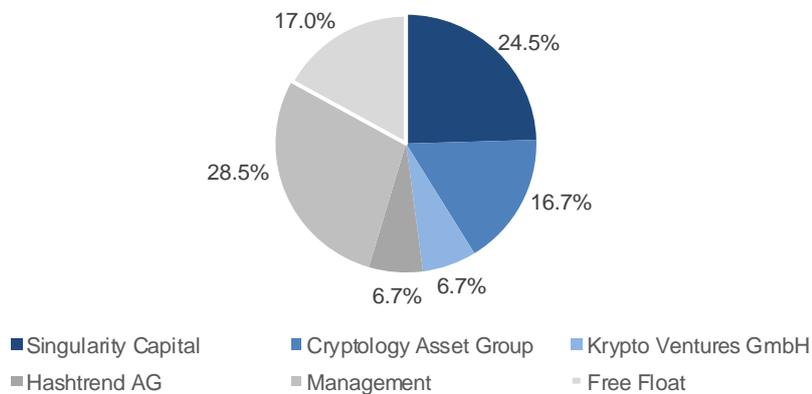
FCF yield, year end Dec. 31	2020E	2021E	2022E	2023E	
<b>EBITDA</b>	<b>50</b>	<b>150</b>	<b>183</b>	<b>222</b>	
- Maintenance capex	5	10	11	13	
- Tax expenses	12	41	51	62	
<b>= Adjusted Free Cash Flow</b>	<b>32</b>	<b>99</b>	<b>120</b>	<b>146</b>	
<b>Actual Market Cap</b>	<b>308</b>	<b>308</b>	<b>308</b>	<b>308</b>	
+Net debt (cash)	5	-33	-112	-223	
EV Reconciliations	155	92	-12	-148	
<b>= Actual EV'</b>	<b>463</b>	<b>401</b>	<b>296</b>	<b>160</b>	
<b>Adjusted Free Cash Flow yield</b>	<b>7.0%</b>	<b>24.6%</b>	<b>40.6%</b>	<b>91.5%</b>	
<b>Sales</b>	<b>134</b>	<b>395</b>	<b>474</b>	<b>481</b>	
Actual EV/sales	3.5x	10x	0.6x	0.3x	
Hurdle rate	10.0%	10.0%	10.0%	10.0%	
FCF margin	24%	25%	25%	30%	
Fair EV/sales	2.4x	2.5x	2.5x	3.0x	
<b>Fair EV</b>	<b>322</b>	<b>986</b>	<b>1,202</b>	<b>1,464</b>	
- EV Reconciliations	155	92	-12	-148	
<b>Fair Market Cap</b>	<b>167</b>	<b>894</b>	<b>1,214</b>	<b>1,612</b>	
No. of shares (million)	112	112	112	112	
<b>Fair value per share</b>	<b>15</b>	<b>80</b>	<b>109</b>	<b>144</b>	
<b>Premium (-) / discount (+) in %</b>	<b>-46%</b>	<b>190%</b>	<b>294%</b>	<b>423%</b>	
<b>Sensitivity analysis fair value</b>					
	7.5%	25	110	145	188
<b>Hurdle rate</b>	10.0%	15	80	109	144
	12.5%	9	62	87	118
	15.0%	5	51	73	101

Source: Company data, Hauck & Aufhäuser

## Shareholder Structure

### Shareholder Structure (11,162,250 shares outstanding)

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Source: Company data, Hauck & Aufhäuser

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## Investment Risks

- **Execution** – Delays in building and ramping its 1GW data center could put the guidance and our estimates in jeopardy.
- **Operations** – The company's high-performance computing infrastructure may not perform according to expectations, or require more energy for cooling, which would put our profitability estimates at risk.
- **Competition** – Companies like Amazon or Microsoft could decide to focus more strongly on high performance computing infrastructure, which would put pressure on prices and margins in the mid- to long-term.

## Financials

Profit and loss (EUR m)	2018	2019E	2020E	2021E	2022E
<b>Net sales</b>	<b>2.5</b>	<b>9.4</b>	<b>134.3</b>	<b>394.9</b>	<b>473.9</b>
<i>Sales growth</i>	<i>n/a</i>	<i>268.8 %</i>	<i>1328.2 %</i>	<i>194.1 %</i>	<i>20.0 %</i>
Increase/decrease in finished goods and work-in-process	0.1	0.5	0.0	0.0	0.0
<b>Total sales</b>	<b>2.7</b>	<b>9.9</b>	<b>134.3</b>	<b>394.9</b>	<b>473.9</b>
Other operating income	0.0	0.2	0.7	1.6	1.4
Material expenses	5.8	16.0	74.5	219.0	262.8
Personnel expenses	0.7	0.9	5.8	14.2	15.3
Other operating expenses	1.1	1.2	5.1	13.2	14.7
Total operating expenses	7.6	17.9	84.7	244.8	291.3
<b>EBITDA</b>	<b>-4.9</b>	<b>-8.0</b>	<b>49.5</b>	<b>150.1</b>	<b>182.5</b>
Depreciation	0.6	0.6	4.9	9.9	10.9
<b>EBITA</b>	<b>-5.6</b>	<b>-8.6</b>	<b>44.6</b>	<b>140.2</b>	<b>171.6</b>
Amortisation of goodwill	0.0	0.0	0.0	0.0	0.0
Amortisation of intangible assets	0.0	0.0	0.1	0.3	0.5
Impairment charges	0.0	0.0	0.0	0.0	0.0
<b>EBIT (inc revaluation net)</b>	<b>-5.6</b>	<b>-8.6</b>	<b>44.5</b>	<b>139.9</b>	<b>171.1</b>
Interest income	0.0	0.0	0.0	0.0	0.0
Interest expenses	0.0	0.7	3.5	2.5	1.5
Other financial result	0.0	0.0	0.0	0.0	0.0
Financial result	0.0	-0.7	-3.5	-2.5	-1.5
<b>Recurring pretax income from continuing operations</b>	<b>-5.6</b>	<b>-9.3</b>	<b>41.0</b>	<b>137.4</b>	<b>169.6</b>
Extraordinary income/loss	0.0	0.0	0.0	0.0	0.0
<b>Earnings before taxes</b>	<b>-5.6</b>	<b>-9.3</b>	<b>41.0</b>	<b>137.4</b>	<b>169.6</b>
Taxes	0.0	0.0	12.3	41.2	50.9
<b>Net income from continuing operations</b>	<b>-5.6</b>	<b>-9.3</b>	<b>28.7</b>	<b>96.1</b>	<b>118.7</b>
Result from discontinued operations (net of tax)	0.0	0.0	0.0	0.0	0.0
<b>Net income</b>	<b>-5.6</b>	<b>-9.3</b>	<b>28.7</b>	<b>96.1</b>	<b>118.7</b>
Minority interest	0.0	0.0	0.0	0.0	0.0
<b>Net profit (reported)</b>	<b>-5.6</b>	<b>-9.3</b>	<b>28.7</b>	<b>96.1</b>	<b>118.7</b>
Average number of shares	11.2	11.2	11.2	11.2	11.2
<b>EPS reported</b>	<b>-0.50</b>	<b>-0.84</b>	<b>2.57</b>	<b>8.61</b>	<b>10.64</b>

Profit and loss (common size)	2018	2019E	2020E	2021E	2022E
<b>Net sales</b>	<b>100.0 %</b>				
Increase/decrease in finished goods and work-in-process	4.7 %	5.3 %	0.0 %	0.0 %	0.0 %
<b>Total sales</b>	<b>104.7 %</b>	<b>105.3 %</b>	<b>100.0 %</b>	<b>100.0 %</b>	<b>100.0 %</b>
Other operating income	0.7 %	2.2 %	0.5 %	0.4 %	0.3 %
Material expenses	226.1 %	170.0 %	55.5 %	55.5 %	55.5 %
Personnel expenses	29.3 %	10.0 %	4.3 %	3.6 %	3.2 %
Other operating expenses	44.0 %	13.0 %	3.8 %	3.4 %	3.1 %
Total operating expenses	298.7 %	190.9 %	63.1 %	62.0 %	61.5 %
<b>EBITDA</b>	<b>neg.</b>	<b>neg.</b>	<b>36.9 %</b>	<b>38.0 %</b>	<b>38.5 %</b>
Depreciation	24.3 %	6.4 %	3.6 %	2.5 %	2.3 %
<b>EBITA</b>	<b>neg.</b>	<b>neg.</b>	<b>33.3 %</b>	<b>35.5 %</b>	<b>36.2 %</b>
Amortisation of goodwill	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Amortisation of intangible assets	0.2 %	0.1 %	0.1 %	0.1 %	0.1 %
Impairment charges	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
<b>EBIT (inc revaluation net)</b>	<b>neg.</b>	<b>neg.</b>	<b>33.2 %</b>	<b>35.4 %</b>	<b>36.1 %</b>
Interest income	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Interest expenses	1.1 %	7.4 %	2.6 %	0.6 %	0.3 %
Other financial result	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Financial result	neg.	neg.	neg.	neg.	neg.
<b>Recurring pretax income from continuing operations</b>	<b>neg.</b>	<b>neg.</b>	<b>30.6 %</b>	<b>34.8 %</b>	<b>35.8 %</b>
Extraordinary income/loss	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
<b>Earnings before taxes</b>	<b>neg.</b>	<b>neg.</b>	<b>30.6 %</b>	<b>34.8 %</b>	<b>35.8 %</b>
Tax rate	0.0 %	0.0 %	30.0 %	30.0 %	30.0 %
<b>Net income from continuing operations</b>	<b>neg.</b>	<b>neg.</b>	<b>21.4 %</b>	<b>24.3 %</b>	<b>25.1 %</b>
Income from discontinued operations (net of tax)	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
<b>Net income</b>	<b>neg.</b>	<b>neg.</b>	<b>21.4 %</b>	<b>24.3 %</b>	<b>25.1 %</b>
Minority interest	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
<b>Net profit (reported)</b>	<b>neg.</b>	<b>neg.</b>	<b>21.4 %</b>	<b>24.3 %</b>	<b>25.1 %</b>

Source: Company data, Hauck &amp; Aufhäuser

Balance sheet (EUR m)	2018	2019E	2020E	2021E	2022E
<b>Intangible assets</b>	<b>0.0</b>	<b>0.0</b>	<b>0.2</b>	<b>0.4</b>	<b>0.7</b>
Property, plant and equipment	4.8	10.3	164.8	169.2	174.4
Financial assets	0.0	0.0	0.0	0.0	0.0
<b>FIXED ASSETS</b>	<b>4.9</b>	<b>10.4</b>	<b>165.0</b>	<b>169.5</b>	<b>175.0</b>
Inventories	0.1	0.3	9.0	26.3	31.6
Accounts receivable	0.0	0.3	11.0	32.5	38.9
Other current assets	0.2	0.2	0.2	0.2	0.2
Liquid assets	3.0	3.5	8.8	46.6	126.1
Deferred taxes	0.0	0.0	0.0	0.0	0.0
Deferred charges and prepaid expenses	0.1	0.1	0.1	0.1	0.1
<b>CURRENT ASSETS</b>	<b>3.3</b>	<b>4.3</b>	<b>29.0</b>	<b>105.6</b>	<b>196.8</b>
<b>TOTAL ASSETS</b>	<b>8.2</b>	<b>14.6</b>	<b>194.1</b>	<b>275.1</b>	<b>371.9</b>
SHAREHOLDERS EQUITY	-0.7	-10.1	18.7	114.8	233.6
MINORITY INTEREST	0.0	0.0	0.0	0.0	0.0
Long-term debt	0.0	14.0	14.0	14.0	14.0
Provisions for pensions and similar obligations	0.0	0.0	0.0	0.0	0.0
Other provisions	0.0	0.0	0.0	0.0	0.0
<b>Non-current liabilities</b>	<b>0.0</b>	<b>14.0</b>	<b>14.0</b>	<b>14.0</b>	<b>14.0</b>
short-term liabilities to banks	0.0	0.0	0.0	0.0	0.0
Accounts payable	2.6	4.4	5.1	15.0	18.0
Advance payments received on orders	0.0	0.0	150.0	125.0	100.0
Other liabilities (incl. from lease and rental contracts)	6.3	6.3	6.3	6.3	6.3
Deferred taxes	0.0	0.0	0.0	0.0	0.0
Deferred income	0.0	0.0	0.0	0.0	0.0
<b>Current liabilities</b>	<b>8.9</b>	<b>10.7</b>	<b>161.4</b>	<b>146.3</b>	<b>124.3</b>
<b>TOTAL LIABILITIES AND SHAREHOLDERS EQUITY</b>	<b>8.2</b>	<b>14.6</b>	<b>194.1</b>	<b>275.1</b>	<b>371.9</b>

Balance sheet (common size)	2018	2019E	2020E	2021E	2022E
<b>Intangible assets</b>	<b>0.2 %</b>	<b>0.2 %</b>	<b>0.1 %</b>	<b>0.1 %</b>	<b>0.2 %</b>
Property, plant and equipment	59.0 %	70.7 %	84.9 %	61.5 %	46.9 %
Financial assets	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
<b>FIXED ASSETS</b>	<b>59.2 %</b>	<b>70.9 %</b>	<b>85.0 %</b>	<b>61.6 %</b>	<b>47.1 %</b>
Inventories	1.5 %	2.1 %	4.6 %	9.6 %	8.5 %
Accounts receivable	0.0 %	1.8 %	5.7 %	11.8 %	10.5 %
Other current assets	2.1 %	1.2 %	0.1 %	0.1 %	0.0 %
Liquid assets	36.6 %	23.6 %	4.5 %	16.9 %	33.9 %
Deferred taxes	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Deferred charges and prepaid expenses	0.7 %	0.4 %	0.0 %	0.0 %	0.0 %
<b>CURRENT ASSETS</b>	<b>40.8 %</b>	<b>29.1 %</b>	<b>15.0 %</b>	<b>38.4 %</b>	<b>52.9 %</b>
<b>TOTAL ASSETS</b>	<b>100.0 %</b>				
SHAREHOLDERS EQUITY	neg.	neg.	9.6 %	41.7 %	62.8 %
MINORITY INTEREST	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Long-term debt	0.0 %	95.7 %	7.2 %	5.1 %	3.8 %
Provisions for pensions and similar obligations	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Other provisions	0.5 %	0.3 %	0.0 %	0.0 %	0.0 %
<b>Non-current liabilities</b>	<b>0.5 %</b>	<b>96.0 %</b>	<b>7.2 %</b>	<b>5.1 %</b>	<b>3.8 %</b>
short-term liabilities to banks	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Accounts payable	31.7 %	29.9 %	2.6 %	5.5 %	4.8 %
Advance payments received on orders	0.0 %	0.0 %	77.3 %	45.4 %	26.9 %
Other liabilities (incl. from lease and rental contracts)	76.6 %	42.9 %	3.2 %	2.3 %	1.7 %
Deferred taxes	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Deferred income	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
<b>Current liabilities</b>	<b>108.3 %</b>	<b>72.9 %</b>	<b>83.2 %</b>	<b>53.2 %</b>	<b>33.4 %</b>
<b>TOTAL LIABILITIES AND SHAREHOLDERS EQUITY</b>	<b>100.0 %</b>				

Source: Company data, Hauck & Aufhäuser

Cash flow statement (EUR m)	2018	2019E	2020E	2021E	2022E
Net profit/loss	-5.6	-9.3	28.7	96.1	118.7
Depreciation of fixed assets (incl. leases)	0.0	0.6	4.9	9.9	10.9
Amortisation of goodwill	0.0	0.0	0.0	0.0	0.0
Amortisation of intangible assets	0.0	0.0	0.1	0.3	0.5
Others	0.0	0.0	0.0	0.0	0.0
Cash flow from operations before changes in w/c	-5.6	-8.7	33.7	106.3	130.1
Increase/decrease in inventory	0.0	-0.2	-8.6	-17.4	-5.3
Increase/decrease in accounts receivable	0.0	-0.3	-10.8	-21.4	-6.5
Increase/decrease in accounts payable	0.0	1.8	0.7	9.9	3.0
Increase/decrease in other working capital positions	1.5	0.0	150.0	-25.0	-25.0
Increase/decrease in working capital	1.5	1.3	131.3	-53.9	-33.8
<b>Cash flow from operating activities</b>	<b>-4.1</b>	<b>-7.4</b>	<b>165.0</b>	<b>52.4</b>	<b>96.4</b>
CAPEX	5.5	6.1	159.7	14.7	16.9
Payments for acquisitions	0.0	0.0	0.0	0.0	0.0
Financial investments	0.0	0.0	0.0	0.0	0.0
Income from asset disposals	0.0	0.0	0.0	0.0	0.0
<b>Cash flow from investing activities</b>	<b>-5.5</b>	<b>-6.1</b>	<b>-159.7</b>	<b>-14.7</b>	<b>-16.9</b>
Cash flow before financing	-9.6	-13.5	5.4	37.8	79.5
Increase/decrease in debt position	6.0	14.0	0.0	0.0	0.0
Purchase of own shares	0.0	0.0	0.0	0.0	0.0
Capital measures	1.4	0.0	0.0	0.0	0.0
Dividends paid	0.0	0.0	0.0	0.0	0.0
Others	0.0	0.0	0.0	0.0	0.0
Effects of exchange rate changes on cash	0.0	0.0	0.0	0.0	0.0
<b>Cash flow from financing activities</b>	<b>7.4</b>	<b>14.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
Increase/decrease in liquid assets	-2.2	0.5	5.4	37.8	79.5
<b>Liquid assets at end of period</b>	<b>3.0</b>	<b>3.5</b>	<b>8.8</b>	<b>46.6</b>	<b>126.1</b>

Source: Company data, Hauck & Aufhäuser

Regional split (EUR m)	2018	2019E	2020E	2021E	2022E
Domestic	0.0	0.0	0.0	0.0	0.0
yoy change	n/a	n/a	n/a	n/a	n/a
Rest of Europe	2.5	9.4	13.4	15.8	19.0
yoy change	-95.9 %	268.8 %	42.8 %	17.7 %	20.0 %
NAFTA	0.0	0.0	120.8	379.1	454.9
yoy change	n/a	n/a	n/a	213.7 %	20.0 %
Asia Pacific	0.0	0.0	0.0	0.0	0.0
yoy change	n/a	n/a	n/a	n/a	n/a
Rest of world	0.0	0.0	0.0	0.0	0.0
yoy change	n/a	n/a	n/a	n/a	n/a
<b>TTL</b>	<b>2.5</b>	<b>9.4</b>	<b>134.3</b>	<b>394.9</b>	<b>473.9</b>
yoy change	-99.0 %	268.8 %	1328.2 %	194.1 %	20.0 %

Source: Company data, Hauck & Aufhäuser

Key ratios (EUR m)	2018	2019E	2020E	2021E	2022E
<b>P&amp;L growth analysis</b>					
Sales growth	n/a	268.8 %	1328.2	194.1 %	20.0 %
EBITDA growth	n/a	62.6 %	-716.2 %	202.9 %	21.6 %
EBIT growth	n/a	55.3 %	-614.9 %	214.0 %	22.4 %
EPS growth	n/a	67.1 %	-407.2 %	234.7 %	23.5 %
<b>Efficiency</b>					
Total operating costs / sales	298.7 %	190.9 %	63.1 %	62.0 %	61.5 %
Sales per employee	n/a	n/a	n/a	n/a	n/a
EBITDA per employee	n/a	n/a	n/a	n/a	n/a
<b>Balance sheet analysis</b>					
Avg. working capital / sales	neg.	neg.	neg.	neg.	neg.
Inventory turnover (sales/inventory)	21.2	30.0	15.0	15.0	15.0
Trade debtors in days of sales	0.0	10.0	30.0	30.0	30.0
A/P turnover [(A/P*365)/sales]	164.8	100.0	25.0	25.0	25.0
Cash conversion cycle (days)	n/a	-82.8	48.8	48.9	48.9
<b>Cash flow analysis</b>					
Free cash flow	-9.6	-13.5	5.4	37.8	79.5
Free cash flow/sales	-375.2 %	-144.1 %	4.0 %	9.6 %	16.8 %
FCF / net profit	neg.	neg.	18.7 %	39.3 %	66.9 %
Capex / depre	103378.0	1004.7	3193.3	144.0 %	148.4 %
Capex / maintenance capex	873.0 %	1001.6	3188.0	139.4 %	141.3 %
Capex / sales	214.7 %	65.2 %	118.9 %	3.7 %	3.6 %
<b>Security</b>					
Net debt	-3.0	10.5	5.2	-32.6	-112.1
Net Debt/EBITDA	0.0	-1.3	0.1	0.0	0.0
Net debt / equity	neg.	neg.	0.3	neg.	neg.
Interest cover	0.0	0.0	12.7	55.9	114.1
Dividend payout ratio	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
<b>Asset utilisation</b>					
Capital employed turnover	-3.7	2.4	4.1	3.1	1.9
Operating assets turnover	1.1	1.4	4.5	4.5	3.7
Plant turnover	0.5	0.9	0.8	2.3	2.7
Inventory turnover (sales/inventory)	21.2	30.0	15.0	15.0	15.0
<b>Returns</b>					
ROCE	817.9 %	-526.1 %	278.2 %	210.6 %	122.1 %
ROE	778.4 %	92.9 %	154.0 %	83.7 %	50.8 %
<b>Other</b>					
Interest paid / avg. debt	n/a	5.0 %	25.0 %	17.9 %	10.7 %
No. employees (average)	0	0	0	0	0
Number of shares	11.2	11.2	11.2	11.2	11.2
DPS	0.0	0.0	0.0	0.0	0.0
EPS reported	-0.50	-0.84	2.57	8.61	10.64
<b>Valuation ratios</b>					
P/BV	-450.3	-32.1	17.3	2.8	1.4
EV/sales	125.8	35.6	3.6	1.1	0.7
EV/EBITDA	-64.9	-41.6	9.7	2.8	1.7
EV/EBITA	-57.6	-38.7	10.7	3.0	1.8
EV/EBIT	-57.6	-38.6	10.8	3.0	1.8
EV/FCF	-33.5	-24.7	89.1	11.0	3.9
Adjusted FCF yield	-1.7 %	-2.6 %	6.7 %	23.7 %	38.6 %
Dividend yield	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %

Source: Company data, Hauck & Aufhäuser

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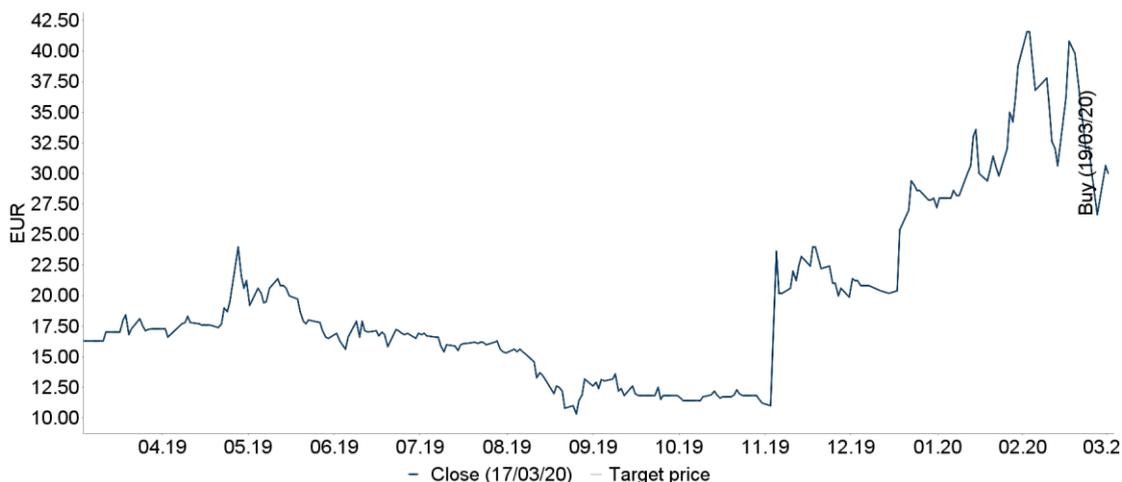
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Company	Disclosure
Northern Data AG	8

**Historical target price and rating changes for Northern Data AG in the last 12 months**

**Price and Rating History  
Northern Data AG as of 18/03/20**

**Initiation coverage**  
19 March 2020



Company	Date	Analyst	Rating	Target price	Close
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The determination of the fair value per share, i.e. the price target, and the resultant rating is done on the basis of the adjusted free cash flow (adj. FCF) method and on the basis of the discounted cash flow – DCF model. Furthermore, a peer group comparison is made.

The adj. FCF method is based on the assumption that investors purchase assets only at a price (enterprise value) at which the operating cash flow return after taxes on this investment exceeds their opportunity costs in the form of a hurdle rate of 7.5%. The operating cash flow is calculated as EBITDA less maintenance capex and taxes.

Within the framework of the DCF approach, the future free cash flows are calculated initially on the basis of a fictitious capital structure of 100% equity, i.e. interest and repayments on debt capital are not factored in initially. The adjustment towards the actual capital structure is done by discounting the calculated free cash flows with the weighted average cost of capital (WACC), which takes into account both the cost of equity capital and the cost of debt. After discounting, the calculated total enterprise value is reduced by the interest-bearing debt capital in order to arrive at the equity value.

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