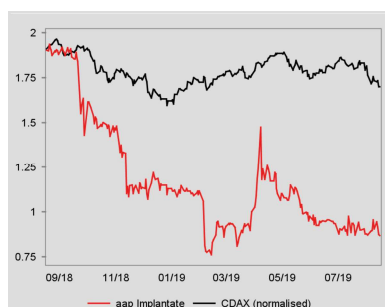


<b>Buy</b>  <b>EUR 2.00</b>  Price <b>EUR 0.87</b> Upside <b>130.4 %</b>	<b>Value Indicators:</b> EUR DCF: 2.00	<b>Share data:</b> Bloomberg: AAQ GR Reuters: AAQG.DE ISIN: DE0005066609	<b>Description:</b> Producer of implants to mend broken bones
	<b>Market Snapshot:</b> EUR m Market cap: 27.8 No. of shares (m): 32.1 EV: 26.6 Freefloat MC: 11.7 Ø Trad. Vol. (30d): 8.27 th	<b>Shareholders:</b> Freefloat 42.2 % <i>Ratio Capital Management</i> 16.3 % <i>Noes Beheer B.V.</i> 13.6 % <i>Jürgen W. Krebs</i> 9.9 % <i>Taaleritehdas</i> 5.5 %	<b>Risk Profile (WRe):</b> 2019e Beta: 1.6 Price / Book: 1.0 x Equity Ratio: 76 %

## Guidance adjusted: Focus turns to profitable growth; Pipeline progressing.

- Efficiency measures initiated by new CEO in first 100 days in office:** With the release of the Q2 report, Mr. Rubino Di Girolamo, who took over as CEO on May 1, marked the first 100 days in his new position. During this time the business portfolio has been reviewed for greater efficiency and cost reduction and the first decisions have been made, e.g. to exit parts of the standard trauma business by the end of 2019. This will allow aap to put greater focus on the innovative and profitable LOQTEQ technology.
- FY-guidance adjusted to reflect stronger focus on profitable growth and negative one-time effects on earnings:** The increased focus on profitable growth results in a more conservative outlook for FY 2019 sales. In view of this, FY sales guidance was lowered to EUR 11-13m (previously: EUR 13-15m) despite the 10%-increase in sales to EUR 6.0m in H1. Growth continued in all main markets such as Germany (H1: +6%), International (+9%) and North America (+10%). The FY EBITDA guidance was also revised to reflect extraordinary expenses of EUR 0.85m, e.g. related to the change in management earlier this year and the termination of legal disputes. About EUR 0.5m of this is was directly related to the early termination of the contract of the former CEO. Adjusted for extraordinary items, EBITDA ("recurring") improved by 18% to minus EUR 2.2m. The company now aims to achieve an FY EBITDA of between minus EUR 6m to minus EUR 5m (previously: minus EUR 4.4-2.8m). This also includes preparation costs to address customers' needs in the field of sterile-packed products, especially in Germany and other CE regions. The measures taken should help to secure the dynamic sales growth in this region.
- LOQTEQ portfolio expanded, gaining momentum in the US:** In July, aap received FDA approval for the innovative LOQTEQ poly-axial Variable Angle (VA) foot system 2.5. The company plans a launch in the US, and other markets for which the FDA approval is relevant, at the beginning of 2020. The poly-axial implants allow screws to be fixed at different angles, improving flexibility within the application. The system will serve a high-growth segment. Worth mentioning in this context is the development of sales in North America generated by distributors (H1: +14% to EUR 1.2m). The number of procedures undertaken by surgeons using LOQTEQ has increased from roughly 15 per week to approx. 30 per week. The target is to further increase the number of procedures per week, which could be achieved by direct contracting with larger hospitals or hospital chains. Furthermore, comprehensive introductions will now be offered to clients, especially surgeons. This was a point of criticism in the past, as competitors were more active in this field. Now, it should be able to bind existing customers and to expand the

Changes in Estimates:							Comment on Changes:	
FY End: 31.12. in EUR m	2019e (old)	+ / -	2020e (old)	+ / -	2021e (old)	+ / -	<ul style="list-style-type: none"> <li>Top-line estimates adjusted to reflect the greater focus on profitable growth and now excluding potential sales to global partners especially in North America.</li> <li>Earnings estimates revised downwards to reflect higher negative one-time payments and shortfall related to lower estimated sales.</li> <li>Our estimates for 2020 and beyond remain unchanged for now</li> </ul>	
Sales	14.0	-22.0 %	17.9	0.0 %	21.9	0.0 %		
EBITDA	-3.6	n.m.	-1.8	0.0 %	0.1	0.0 %		
EBT	-5.3	n.m.	-4.0	0.0 %	-2.6	0.0 %		
EPS	-0.17	n.m.	-0.12	0.0 %	-0.08	0.0 %		



Rel. Performance vs CDAX:	
1 month:	-0.1 %
6 months:	5.3 %
Year to date:	-28.0 %
Trailing 12 months:	-43.3 %

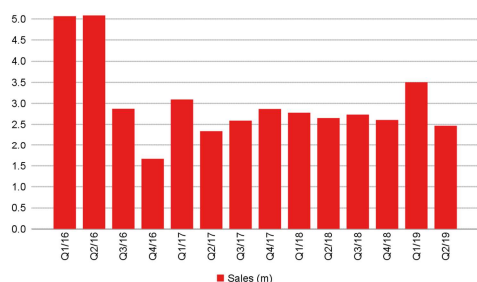
**Company events:**  
14.11.19 Q3

FY End: 31.12. in EUR m	CAGR (18-21e)	2015	2016	2017	2018	2019e	2020e	2021e
Sales	26.6 %	28.0	14.7	10.9	10.8	11.0	17.9	21.9
Change Sales yoy		-11.4 %	-47.5 %	-25.8 %	-1.1 %	1.7 %	63.1 %	22.3 %
EBITDA	-	-1.9	16.0	-6.2	-6.4	-6.0	-1.8	0.1
Margin		-6.7 %	109.0 %	-57.0 %	-59.5 %	-54.5 %	-9.9 %	0.5 %
EBITDA adj.		-1.9	-7.9	-6.2	-6.4	-6.0	-1.8	0.1
Margin		-6.7 %	-53.7 %	-57.0 %	-59.5 %	-54.5 %	-9.9 %	0.5 %
EBIT	-	-4.9	13.7	-8.0	-8.1	-8.8	-4.1	-2.7
Margin		-17.5 %	93.4 %	-73.3 %	-75.5 %	-80.6 %	-22.9 %	-12.5 %
Net income	-	-5.3	14.6	-8.9	-7.8	-9.1	-3.9	-2.5
EPS	-	-0.17	0.47	-0.31	-0.27	-0.30	-0.12	-0.08
DPS	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dividend Yield		n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
FCFPS		-0.02	-0.30	-0.26	-0.31	-0.20	-0.18	-0.10
FCF / Market cap		-1.0 %	-22.5 %	-17.9 %	-17.8 %	-22.2 %	-20.8 %	-11.2 %
EV / Sales		1.9 x	1.3 x	2.7 x	4.2 x	2.4 x	1.8 x	1.6 x
EV / EBITDA		n.a.	1.2 x	n.a.	n.a.	n.a.	n.a.	346.7 x
EV / EBIT		n.a.	1.4 x	n.a.	n.a.	n.a.	n.a.	n.a.
P / E		n.a.	2.8 x	n.a.	n.a.	n.a.	n.a.	n.a.
FCF Potential Yield		-8.3 %	73.4 %	-25.9 %	-18.2 %	-34.4 %	-12.3 %	-7.4 %
Net Debt		-15.0	-21.5	-12.2	-3.9	-1.2	4.6	7.7
ROCE (NOPAT)		n.a.	48.8 %	n.a.	n.a.	n.a.	n.a.	n.a.
Guidance:	Sales EUR 11.0-13.0m, EBITDA EUR -6.0 to -5.0m							

business in North America on a consistent basis.

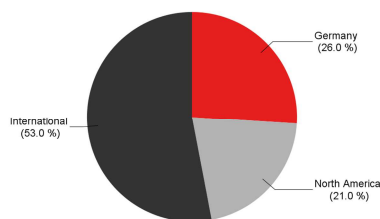
- **Important milestone achieved for the start of human clinical study:** On August 8, aap received the approval to conduct a human clinical study for its antibacterial silver coating technology by the German Federal Institute for Drugs and Medical Devices (BfArM). This was a major and important milestone. Now, only the approvals of the ethics commissions are outstanding. aap aims to start the first study in the course of the current year. Furthermore, aap has submitted an application to the FDA for approval for a human clinical study in the US at the beginning of August. aap is in ongoing discussion with potential partners, interested in joint product developments, and/or in licensing deals covering specific application areas for the innovative antibacterial silver coating technology. If successful, a market launch could be expected in 2022.
- **Pressing ahead with resorbable magnesium technology:** Surprisingly, aap is pressing ahead with the development of its resorbable magnesium implant technology in the US. The reason is that the US is the predestinated market for this technology as second surgeries (explantation of implants) are less frequently conducted owing to liability issues. Furthermore, aap received a high level of interest in the innovative technology from market participants and potential investors. The company aims to start a small animal study in cooperation with the University of Colorado shortly. aap is striving to develop this early-stage technology together with a partner. We would regard a technology-driven venture capitalist as the preferred interested party in this respect. We view this as clearly positive as the company is trying to avoid further time losses and is utilizing its innovative IP (patents) further.
- **Buy rating reiterated, positive news-flow ahead:** Against the backdrop of the potential offered by LOQTEQ and a promising product pipeline, aap is an attractive investment opportunity. Assuming the continuation of a successful rollout of LOQTEQ in the US and ongoing growth in other core markets as well as a positive outcome to the human clinical study planned for the antibacterial silver technology we derive a DCF-based fair value of EUR 2.00 per share. News-flow should be positive given the expected start of the first human clinical trial in Germany and the announcement of potential partnership deals. Buy rating reiterated.

**Sales development**  
in EUR m



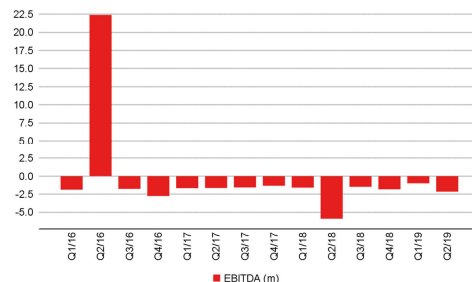
Source: Warburg Research

**Sales by regions**  
2018; in %



Source: Warburg Research

**EBITDA development**  
in EUR m



Source: Warburg Research

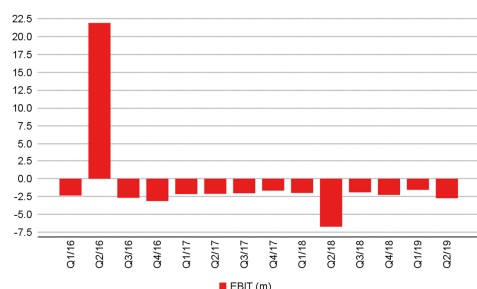
## Company Background

- aap Implantate AG develops, produces and sells medical implants, which are primarily used in orthopaedics to mend fractures.
- aap Implantate AG was founded in 1990 as a MBO from the Johnson & Johnson Group and is headquartered in Berlin.
- The company covers the entire value chain and sells the products worldwide with a focus on established markets as Germany, North America as well as further European countries.
- The products are sold by direct sale, international sales partners or OEM partnerships.
- Increasing in importance are the so-called "Global Partners", larger companies interested in an agreement to distribute aap's current products (and, if approved, the silver coating technology) via their sales channels.

## Competitive Quality

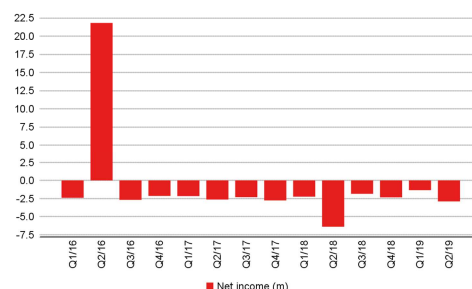
- aap Implantate AG has developed a patent protected anatomical plating system (LOQTEQ), which provides significant improvements for surgeons, hospitals and clinics as well as patients.
- Additionally aap has a promising development pipeline with an antibacterial silver coating for the implants as well as coated magnesium implants.

**EBIT development**  
in EUR m



Source: Warburg Research

**Net income development**  
in EUR m



Source: Warburg Research

## DCF model

Figures in EUR m	Detailed forecast period			Transitional period										Term. Value
	2019e	2020e	2021e	2022e	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e	2031e	
Sales	11.0	17.9	21.9	30.4	39.2	42.5	45.4	48.3	51.0	53.7	56.2	58.4	60.4	2.5 %
Sales change	1.7 %	63.1 %	22.3 %	39.2 %	28.8 %	8.5 %	6.8 %	6.4 %	5.5 %	5.3 %	4.7 %	4.0 %	3.3 %	
EBIT	-8.8	-4.1	-2.7	2.3	5.2	6.2	7.2	8.1	9.0	9.9	11.7	12.2	12.6	20.8 %
EBIT-margin	-80.6 %	-22.9 %	-12.5 %	7.5 %	13.1 %	14.7 %	15.8 %	16.9 %	17.7 %	18.5 %	20.8 %	20.8 %	20.8 %	
Tax rate (EBT)	-3.7 %	2.5 %	3.8 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	9.0
NOPAT	-9.2	-4.0	-2.6	1.6	3.7	4.5	5.2	5.9	6.5	7.1	8.4	8.8	9.0	
Depreciation	2.9	2.3	2.8	3.7	4.5	4.4	4.2	4.0	3.7	3.4	2.8	2.3	1.8	3.0 %
in % of Sales	26.2 %	13.0 %	13.0 %	12.3 %	11.4 %	10.4 %	9.3 %	8.2 %	7.3 %	6.3 %	5.0 %	4.0 %	3.0 %	
Changes in provisions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Change in Liquidity from														
- Working Capital	-1.7	3.5	2.7	1.2	-0.2	1.3	1.2	1.2	1.1	1.1	1.0	0.9	0.8	1.8
- Capex	1.7	0.7	0.7	2.2	2.5	2.2	2.2	2.1	2.0	1.8	1.8	1.8	1.8	
Capex in % of Sales	15.8 %	4.1 %	3.3 %	7.3 %	6.4 %	5.2 %	4.8 %	4.3 %	3.9 %	3.4 %	3.2 %	3.0 %	3.0 %	0.0
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Free Cash Flow (WACC Model)	-6.3	-5.9	-3.2	1.9	5.8	5.4	6.1	6.6	7.2	7.6	8.4	8.4	8.3	9
PV of FCF	-6.1	-5.2	-2.6	1.4	3.9	3.3	3.4	3.3	3.3	3.2	3.2	2.9	2.6	
share of PVs	-24.54 %			53.81 %										70.73 %

### Model parameter

Derivation of WACC:

Debt ratio	15.00 %
Cost of debt (after tax)	6.8 %
Market return	7.00 %
Risk free rate	1.50 %

**WACC** **9.77 %**

Derivation of Beta:

Financial Strength	2.40
Liquidity (share)	1.80
Cyclicality	1.20
Transparency	1.40
Others	1.20

**Beta** **1.60**

### Valuation (m)

Present values 2031e

Terminal Value	40
Financial liabilities	0
Pension liabilities	0
Hybrid capital	0
Minority interest	0
Market val. of investments	0
Liquidity	8
Equity Value	64
No. of shares (m)	32.1
Value per share (EUR)	2.00

### Sensitivity Value per Share (EUR)

		Terminal Growth									Delta EBIT-margin						
Beta	WACC	1.75 %	2.00 %	2.25 %	2.50 %	2.75 %	3.00 %	3.25 %	Beta	WACC	-1.5 pp	-1.0 pp	-0.5 pp	+0.0 pp	+0.5 pp	+1.0 pp	+1.5 pp
1.81	10.8 %	1.59	1.61	1.64	1.67	1.70	1.73	1.77	1.81	10.8 %	1.51	1.56	1.62	1.67	1.72	1.78	1.83
1.71	10.3 %	1.73	1.76	1.79	1.82	1.86	1.90	1.94	1.71	10.3 %	1.65	1.71	1.76	1.82	1.88	1.94	2.00
1.65	10.0 %	1.80	1.83	1.87	1.91	1.95	1.99	2.04	1.65	10.0 %	1.73	1.79	1.85	1.91	1.97	2.03	2.09
1.60	9.8 %	1.88	1.92	1.96	2.00	2.04	2.09	2.14	1.60	9.8 %	1.81	1.87	1.94	2.00	2.06	2.12	2.19
1.55	9.5 %	1.97	2.01	2.05	2.10	2.15	2.20	2.26	1.55	9.5 %	1.90	1.97	2.03	2.10	2.16	2.23	2.29
1.49	9.3 %	2.06	2.10	2.15	2.20	2.26	2.31	2.38	1.49	9.3 %	2.00	2.07	2.13	2.20	2.27	2.34	2.41
1.39	8.8 %	2.26	2.32	2.38	2.44	2.51	2.58	2.66	1.39	8.8 %	2.22	2.29	2.36	2.44	2.51	2.59	2.66

- With EUR 20-22m in sales, the company is expected to reach break-even (EBITDA).
- Beta is relatively high owing to the cyclicality of customers order behavior.

## Peer Group

Company	LC	Price in LC	MC in LC m	EV in LC m	P / E		EV / Sales		EV / EBITDA	
					19e	20e	19e	20e	19e	20e
Globus Medical	USD	48.71	3,734.6	4,219.1	28.4 x	25.4 x	5.4 x	5.0 x	16.4 x	14.6 x
NuVasive	USD	63.13	3,285.7	3,844.7	27.2 x	24.7 x	3.3 x	3.2 x	13.2 x	12.3 x
Orthofix	USD	49.92	950.0	925.5	32.0 x	25.1x	2.0 x	1.8 x	10.5 x	12.4 x
Wright Medical	USD	2101	2,661.5	3,684.7	168.1x	52.9 x	4.0 x	3.6 x	23.3 x	18.3 x
Integra LifeSciences	USD	60.03	5,134.6	6,418.1	22.0 x	19.8 x	4.2 x	4.0 x	17.3 x	15.7 x
Average					55.5 x	29.6 x	3.8 x	3.5 x	16.2 x	14.7 x
Median					28.4 x	25.1x	4.0 x	3.6 x	16.4 x	14.6 x
<b>aap Implantate</b>	<b>EUR</b>	<b>0.87</b>	<b>27.8</b>	<b>30.8</b>	<b>neg.</b>	<b>neg.</b>	<b>2.8 x</b>	<b>1.7 x</b>	<b>neg.</b>	<b>neg.</b>
Valuation difference to Average					n.a.	n.a.	34%	104%	n.a.	n.a.

- Peer group comparison shows the undervaluation of aap
- The valuation of unprofitable peers is considerably higher in terms of EV/sales
- Peers include trauma companies with a global presence
- aap is a pure player in the trauma area. The peer group demonstrates the potential of a pure trauma focus.

## Valuation

	2015	2016	2017	2018	2019e	2020e	2021e
Price / Book	1.7 x	0.7 x	1.0 x	1.4 x	1.0 x	1.1 x	1.1 x
Book value per share ex intangibles	0.97	1.42	1.07	0.75	0.49	0.39	0.35
EV / Sales	1.9 x	1.3 x	2.7 x	4.2 x	2.4 x	1.8 x	1.6 x
EV / EBITDA	n.a.	1.2 x	n.a.	n.a.	n.a.	n.a.	346.7 x
EV / EBIT	n.a.	1.4 x	n.a.	n.a.	n.a.	n.a.	n.a.
EV / EBIT adj.*	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
P / FCF	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
P / E	n.a.	2.8 x	n.a.	n.a.	n.a.	n.a.	n.a.
P / E adj.*	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Dividend Yield	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
FCF Potential Yield (on market EV)	-8.3 %	73.4 %	-25.9 %	-18.2 %	-34.4 %	-12.3 %	-7.4 %

\*Adjustments made for: -

## Consolidated profit & loss

In EUR m	2015	2016	2017	2018	2019e	2020e	2021e
<b>Sales</b>	<b>28.0</b>	<b>14.7</b>	<b>10.9</b>	<b>10.8</b>	<b>11.0</b>	<b>17.9</b>	<b>21.9</b>
Change Sales yoy	-11.4 %	-47.5 %	-25.8 %	-1.1 %	1.7 %	63.1 %	22.3 %
Increase / decrease in inventory	3.8	1.3	-0.5	0.0	0.0	0.0	0.0
Own work capitalised	2.1	1.4	1.3	1.9	1.8	1.1	1.7
<b>Total Sales</b>	<b>33.9</b>	<b>17.4</b>	<b>11.7</b>	<b>12.6</b>	<b>12.8</b>	<b>18.9</b>	<b>23.6</b>
Material expenses	13.7	5.7	1.9	2.3	2.6	3.2	3.9
<b>Gross profit</b>	<b>20.2</b>	<b>11.6</b>	<b>9.8</b>	<b>10.3</b>	<b>10.1</b>	<b>15.7</b>	<b>19.7</b>
<b>Gross profit margin</b>	<b>72.2 %</b>	<b>79.1 %</b>	<b>89.9 %</b>	<b>95.5 %</b>	<b>92.4 %</b>	<b>88.0 %</b>	<b>90.0 %</b>
Personnel expenses	11.9	10.0	7.4	7.8	8.7	9.8	11.9
Other operating income	1.6	24.3	0.8	0.5	1.6	1.6	1.6
Other operating expenses	11.8	10.0	9.4	9.4	9.0	9.3	9.3
Unfrequent items	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>EBITDA</b>	<b>-1.9</b>	<b>16.0</b>	<b>-6.2</b>	<b>-6.4</b>	<b>-6.0</b>	<b>-1.8</b>	<b>0.1</b>
<b>Margin</b>	<b>-6.7 %</b>	<b>109.0 %</b>	<b>-57.0 %</b>	<b>-59.5 %</b>	<b>-54.5 %</b>	<b>-9.9 %</b>	<b>0.5 %</b>
Depreciation of fixed assets	1.6	1.1	1.2	1.1	2.3	1.4	1.7
<b>EBITA</b>	<b>-3.5</b>	<b>14.9</b>	<b>-7.4</b>	<b>-7.5</b>	<b>-8.3</b>	<b>-3.2</b>	<b>-1.6</b>
Amortisation of intangible assets	0.9	1.1	0.6	0.7	0.5	0.9	1.1
Goodwill amortisation	0.5	0.0	0.0	0.0	0.0	0.0	0.0
<b>EBIT</b>	<b>-4.9</b>	<b>13.7</b>	<b>-8.0</b>	<b>-8.1</b>	<b>-8.8</b>	<b>-4.1</b>	<b>-2.7</b>
<b>Margin</b>	<b>-17.5 %</b>	<b>93.4 %</b>	<b>-73.3 %</b>	<b>-75.5 %</b>	<b>-80.6 %</b>	<b>-22.9 %</b>	<b>-12.5 %</b>
<b>EBIT adj.</b>	<b>-4.9</b>	<b>-10.2</b>	<b>-8.0</b>	<b>-8.1</b>	<b>-8.8</b>	<b>-4.1</b>	<b>-2.7</b>
Interest income	0.0	0.0	0.0	0.0	0.3	0.3	0.3
Interest expenses	0.0	0.0	0.0	0.0	0.2	0.2	0.2
Other financial income (loss)	-0.4	0.3	-1.3	0.5	0.0	0.0	0.0
<b>EBT</b>	<b>-5.3</b>	<b>14.0</b>	<b>-9.3</b>	<b>-7.7</b>	<b>-8.7</b>	<b>-4.0</b>	<b>-2.6</b>
<b>Margin</b>	<b>-19.1 %</b>	<b>95.6 %</b>	<b>-85.3 %</b>	<b>-71.0 %</b>	<b>-79.7 %</b>	<b>-22.3 %</b>	<b>-12.1 %</b>
Total taxes	0.0	-0.6	0.0	0.0	0.3	-0.1	-0.1
<b>Net income from continuing operations</b>	<b>-5.3</b>	<b>14.6</b>	<b>-9.3</b>	<b>-7.6</b>	<b>-9.1</b>	<b>-3.9</b>	<b>-2.5</b>
Income from discontinued operations (net of tax)	0.0	-0.1	0.3	-0.2	0.0	0.0	0.0
<b>Net income before minorities</b>	<b>-5.3</b>	<b>14.6</b>	<b>-8.9</b>	<b>-7.8</b>	<b>-9.1</b>	<b>-3.9</b>	<b>-2.5</b>
Minority interest	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Net income</b>	<b>-5.3</b>	<b>14.6</b>	<b>-8.9</b>	<b>-7.8</b>	<b>-9.1</b>	<b>-3.9</b>	<b>-2.5</b>
<b>Margin</b>	<b>-19.1 %</b>	<b>99.2 %</b>	<b>-82.0 %</b>	<b>-72.5 %</b>	<b>-82.6 %</b>	<b>-21.8 %</b>	<b>-11.6 %</b>
Number of shares, average	30.7	30.8	28.6	28.7	30.7	32.1	32.1
<b>EPS</b>	<b>-0.17</b>	<b>0.47</b>	<b>-0.31</b>	<b>-0.27</b>	<b>-0.30</b>	<b>-0.12</b>	<b>-0.08</b>
EPS adj.	-0.17	-0.30	-0.31	-0.27	-0.30	-0.12	-0.08

\*Adjustments made for:

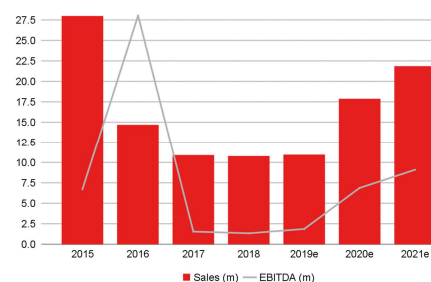
**Guidance: Sales EUR 11.0-13.0m, EBITDA EUR -6.0 to -5.0m**

## Financial Ratios

	2015	2016	2017	2018	2019e	2020e	2021e
Total Operating Costs / Sales	127.9 %	9.2 %	164.0 %	176.8 %	170.9 %	115.9 %	107.5 %
Operating Leverage	-922.7 x	n.a.	n.a.	-1.7 x	5.1 x	-0.9 x	-1.5 x
EBITDA / Interest expenses	n.m.	800.5 x	n.m.	n.m.	n.m.	n.m.	0.5 x
Tax rate (EBT)	-0.2 %	-4.2 %	0.3 %	0.2 %	-3.7 %	2.5 %	3.8 %
Dividend Payout Ratio	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Sales per Employee	156,302	94,755	75,186	74,352	75,586	123,283	150,730

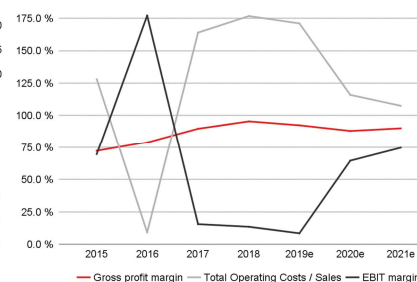
### Sales, EBITDA

in EUR m

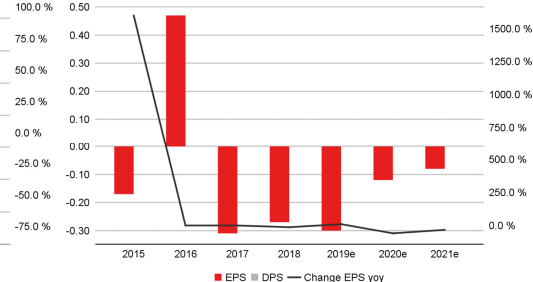


### Operating Performance

in %



### Performance per Share



Source: Warburg Research

Source: Warburg Research

Source: Warburg Research

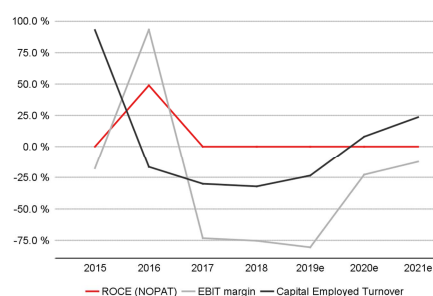
## Consolidated balance sheet

In EUR m	2015	2016	2017	2018	2019e	2020e	2021e
<b>Assets</b>							
Goodwill and other intangible assets	10.4	11.1	11.8	13.3	13.1	13.1	13.1
thereof other intangible assets	0.5	0.1	0.1	0.2	0.0	0.0	0.0
thereof Goodwill	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Property, plant and equipment	7.7	7.6	7.2	6.9	5.3	4.6	3.6
Financial assets	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Other long-term assets	0.0	1.8	1.1	0.6	0.6	0.6	0.6
<b>Fixed assets</b>	<b>18.3</b>	<b>20.8</b>	<b>20.3</b>	<b>20.9</b>	<b>19.1</b>	<b>18.4</b>	<b>17.4</b>
Inventories	9.7	11.1	9.6	9.6	8.4	11.9	14.6
Accounts receivable	5.5	2.9	2.5	2.7	2.2	3.6	4.4
Liquid assets	19.6	23.8	13.3	4.3	3.3	1.8	0.3
Other short-term assets	1.8	5.3	4.7	4.8	4.8	4.8	4.8
<b>Current assets</b>	<b>36.6</b>	<b>43.1</b>	<b>30.2</b>	<b>21.3</b>	<b>18.6</b>	<b>22.0</b>	<b>24.1</b>
<b>Total Assets</b>	<b>54.9</b>	<b>63.9</b>	<b>50.5</b>	<b>42.2</b>	<b>37.7</b>	<b>40.4</b>	<b>41.5</b>
<b>Liabilities and shareholders' equity</b>							
Subscribed capital	30.7	30.8	28.6	28.7	32.1	32.1	32.1
Capital reserve	17.6	17.5	19.9	20.0	20.1	20.1	20.1
Retained earnings	0.9	15.2	12.1	11.9	2.8	-1.1	-3.6
Other equity components	-8.9	-8.7	-18.0	-25.7	-26.4	-25.5	-24.4
Shareholders' equity	40.3	54.8	42.6	34.9	28.7	25.7	24.2
Minority interest	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total equity</b>	<b>40.3</b>	<b>54.8</b>	<b>42.6</b>	<b>34.9</b>	<b>28.7</b>	<b>25.7</b>	<b>24.2</b>
Provisions	0.3	0.4	0.8	0.3	0.3	0.3	0.3
thereof provisions for pensions and similar obligations	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Financial liabilities (total)	4.6	2.3	1.1	0.3	2.0	6.3	8.0
thereof short-term financial liabilities	3.3	1.3	0.3	0.0	0.0	4.3	6.0
Accounts payable	4.1	2.5	1.8	2.1	2.2	3.6	4.4
Other liabilities	5.6	3.8	4.3	4.5	4.5	4.5	4.5
<b>Liabilities</b>	<b>14.6</b>	<b>9.1</b>	<b>7.9</b>	<b>7.3</b>	<b>9.0</b>	<b>14.7</b>	<b>17.2</b>
<b>Total liabilities and shareholders' equity</b>	<b>54.9</b>	<b>63.9</b>	<b>50.5</b>	<b>42.2</b>	<b>37.7</b>	<b>40.4</b>	<b>41.5</b>

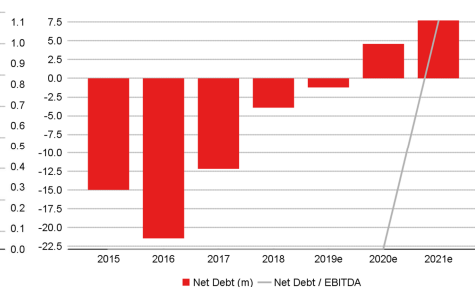
## Financial Ratios

	2015	2016	2017	2018	2019e	2020e	2021e
<b>Efficiency of Capital Employment</b>							
Operating Assets Turnover	1.5 x	0.8 x	0.6 x	0.6 x	0.8 x	1.1 x	1.2 x
Capital Employed Turnover	1.1 x	0.4 x	0.4 x	0.3 x	0.4 x	0.6 x	0.7 x
ROA	-29.2 %	70.2 %	-44.0 %	-37.4 %	-47.4 %	-21.2 %	-14.6 %
<b>Return on Capital</b>							
ROCE (NOPAT)	n.a.	48.8 %	n.a.	n.a.	n.a.	n.a.	n.a.
ROE	-12.5 %	30.7 %	-18.4 %	-20.2 %	-28.5 %	-14.3 %	-10.2 %
Adj. ROE	-12.5 %	-19.6 %	-18.4 %	-20.2 %	-28.5 %	-14.3 %	-10.2 %
<b>Balance sheet quality</b>							
Net Debt	-15.0	-21.5	-12.2	-3.9	-1.2	4.6	7.7
Net Financial Debt	-15.0	-21.5	-12.2	-3.9	-1.2	4.6	7.7
Net Gearing	-37.2 %	-39.2 %	-28.7 %	-11.2 %	-4.2 %	17.9 %	31.8 %
Net Fin. Debt / EBITDA	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	7523.9 %
Book Value / Share	1.3	1.8	1.5	1.2	0.9	0.8	0.8
Book value per share ex intangibles	1.0	1.4	1.1	0.8	0.5	0.4	0.3

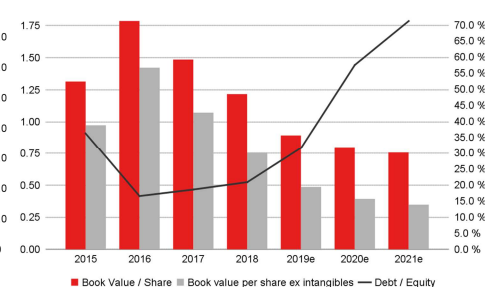
### ROCE Development



### Net debt in EUR m



### Book Value per Share in EUR



Source: Warburg Research

Source: Warburg Research

Source: Warburg Research



## Consolidated cash flow statement

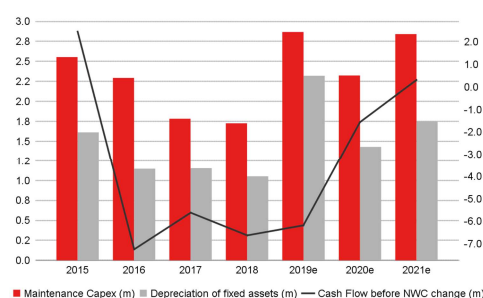
In EUR m	2015	2016	2017	2018	2019e	2020e	2021e
Net income	-5.3	14.6	-9.3	-7.6	-9.1	-3.9	-2.5
Depreciation of fixed assets	1.6	1.1	1.2	1.1	2.3	1.4	1.7
Amortisation of goodwill	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Amortisation of intangible assets	0.9	1.1	0.6	0.7	0.5	0.9	1.1
Increase/decrease in long-term provisions	0.0	0.4	0.3	-0.5	0.0	0.0	0.0
Other non-cash income and expenses	4.8	-24.6	1.5	-0.2	0.0	0.0	0.0
<b>Cash Flow before NWC change</b>	<b>2.5</b>	<b>-7.2</b>	<b>-5.6</b>	<b>-6.6</b>	<b>-6.2</b>	<b>-1.6</b>	<b>0.3</b>
Increase / decrease in inventory	0.0	0.1	0.1	0.6	1.2	-3.5	-2.7
Increase / decrease in accounts receivable	0.0	0.0	0.0	0.0	0.5	-1.4	-0.8
Increase / decrease in accounts payable	0.0	0.0	0.0	0.0	0.1	1.4	0.8
Increase / decrease in other working capital positions	0.0	-0.1	0.1	0.1	0.0	0.0	0.0
Increase / decrease in working capital (total)	0.0	0.0	0.2	0.7	1.7	-3.5	-2.7
<b>Net cash provided by operating activities [1]</b>	<b>2.5</b>	<b>-7.2</b>	<b>-5.4</b>	<b>-5.9</b>	<b>-4.5</b>	<b>-5.1</b>	<b>-2.4</b>
Investments in intangible assets	0.0	-1.0	-1.3	-2.2	-1.0	0.0	0.0
Investments in property, plant and equipment	-3.1	-1.0	-0.7	-0.7	-0.7	-0.7	-0.7
Payments for acquisitions	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Financial investments	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Income from asset disposals	0.1	31.9	0.5	0.0	0.0	0.0	0.0
<b>Net cash provided by investing activities [2]</b>	<b>-3.1</b>	<b>29.8</b>	<b>-1.5</b>	<b>-3.0</b>	<b>-1.7</b>	<b>-0.7</b>	<b>-0.7</b>
Change in financial liabilities	-1.1	-2.3	-1.4	-0.8	1.7	4.3	1.7
Dividends paid	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Purchase of own shares	0.0	0.0	-3.4	0.0	0.0	0.0	0.0
Capital measures	0.2	0.0	0.1	0.1	3.5	0.0	0.0
Other	-1.0	-2.3	1.2	0.6	0.0	0.0	0.0
<b>Net cash provided by financing activities [3]</b>	<b>-1.9</b>	<b>-4.6</b>	<b>-3.5</b>	<b>-0.2</b>	<b>5.2</b>	<b>4.3</b>	<b>1.7</b>
<b>Change in liquid funds [1]+[2]+[3]</b>	<b>-2.5</b>	<b>18.1</b>	<b>-10.5</b>	<b>-9.0</b>	<b>-1.0</b>	<b>-1.5</b>	<b>-1.4</b>
Effects of exchange-rate changes on cash	0.0	0.8	0.0	0.0	0.0	0.0	0.0
Cash and cash equivalent at end of period	9.7	23.8	13.3	4.3	3.3	1.8	0.3

## Financial Ratios

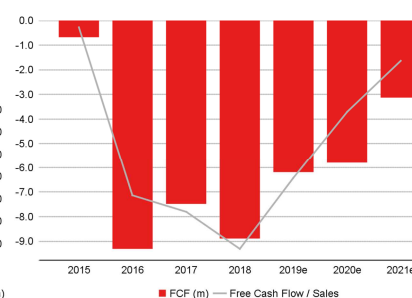
	2015	2016	2017	2018	2019e	2020e	2021e
<b>Cash Flow</b>							
FCF	-0.7	-9.3	-7.5	-8.9	-6.2	-5.8	-3.1
Free Cash Flow / Sales	-2.4 %	-62.7 %	-68.6 %	-81.7 %	-56.5 %	-32.5 %	-14.3 %
Free Cash Flow Potential	-4.4	14.3	-7.6	-8.3	-9.2	-4.0	-2.6
Free Cash Flow / Net Profit	12.7 %	-63.1 %	83.6 %	112.8 %	68.3 %	149.0 %	123.3 %
Interest Received / Avg. Cash	0.0 %	0.1 %	0.0 %	0.0 %	8.0 %	12.0 %	28.8 %
Interest Paid / Avg. Debt	0.8 %	0.6 %	2.8 %	4.2 %	16.7 %	4.8 %	2.8 %
<b>Management of Funds</b>							
Investment ratio	11.2 %	13.6 %	18.8 %	26.9 %	15.8 %	4.1 %	3.3 %
Maint. Capex / Sales	9.1 %	15.6 %	16.4 %	16.0 %	26.2 %	13.0 %	13.0 %
Capex / Dep	103.9 %	87.2 %	114.8 %	167.7 %	60.4 %	31.5 %	25.8 %
Avg. Working Capital / Sales	48.0 %	76.8 %	100.2 %	95.3 %	84.5 %	56.8 %	60.6 %
Trade Debtors / Trade Creditors	134.5 %	115.5 %	145.1 %	123.9 %	100.0 %	100.0 %	100.0 %
Inventory Turnover	1.4 x	0.5 x	0.2 x	0.2 x	0.3 x	0.3 x	0.3 x
Receivables collection period (days)	72	73	85	90	73	74	73
Payables payment period (days)	109	162	342	335	305	408	408
Cash conversion cycle (Days)	221	614	1,619	1,255	934	1,015	1,020

## CAPEX and Cash Flow

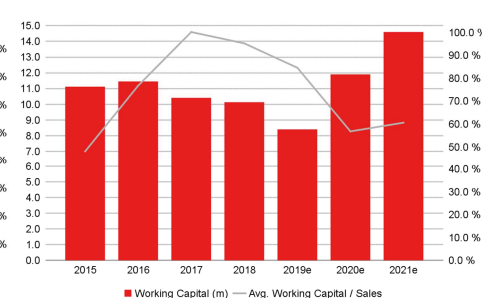
in EUR m



## Free Cash Flow Generation



## Working Capital



Source: Warburg Research

Source: Warburg Research

Source: Warburg Research



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-B-	<b>Buy:</b>	The price of the analysed financial instrument is expected to rise over the next 12 months.
-H-	<b>Hold:</b>	The price of the analysed financial instrument is expected to remain mostly flat over the next 12 months.
-S-	<b>Sell:</b>	The price of the analysed financial instrument is expected to fall over the next 12 months.
“-“	<b>Rating suspended:</b>	The available information currently does not permit an evaluation of the company.

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Rating	Number of stocks	% of Universe
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Hold	67	34
Sell	7	4
Rating suspended	5	3
<b>Total</b>	<b>199</b>	<b>100</b>

## WARBURG RESEARCH GMBH – ANALYSED RESEARCH UNIVERSE BY RATING ...

... taking into account only those companies which were provided with major investment services in the last twelve months.

Rating	Number of stocks	% of Universe
Buy	33	79
Hold	7	17
Sell	0	0
Rating suspended	2	5
<b>Total</b>	<b>42</b>	<b>100</b>

## PRICE AND RATING HISTORY AAP IMPLANTATE AS OF 16.08.2019



Markings in the chart show rating changes by Warburg Research GmbH in the last 12 months. Every marking details the date and closing price on the day of the rating change.

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