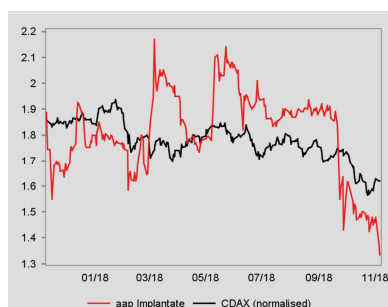


<b>Buy</b>  <b>EUR 2.00</b> (EUR 2.40)  Price <b>EUR 1.34</b> <b>Upside 49.8 %</b>	<b>Value Indicators:</b> EUR DCF: 2.03	<b>Share data:</b> Bloomberg: AAQ GR Reuters: AAQG.DE ISIN: DE0005066609	<b>Description:</b> Producer of implants to mend broken bones
	<b>Market Snapshot:</b> EUR m Market cap: 38.2 No. of shares (m): 28.6 EV: 31.7 Freefloat MC: 16.7 Ø Trad. Vol. (30d): 23.51 th	<b>Shareholders:</b> Freefloat: 43.6 % <i>Ratio Capital Management</i> : 15.8 % <i>Noes Beheer B.V.</i> : 11.7 % <i>Jürgen W. Krebs</i> : 11.6 % <i>Taaleritehdas</i> : 6.8 %	<b>Risk Profile (WRe):</b> 2018e Beta: 1.6 Price / Book: 1.0 x Equity Ratio: 82 %

## FY targets adjusted due to lower than expected sales in North America

- Partnering takes time:** aap Implantate issued a profit warning after markets closed on November 2. The main reason for the profit warning is development in the North American region, which is below management expectations. In general, this does not come as a complete surprise, considering the problems with an important distributor, that were already addressed during the Q2 results presentation, and as the company has not secured another distribution agreement with a global partner in the region. Ongoing discussions with potential so-called "global partners" are now more likely to result in concrete projects in 2019. Global partners are larger companies interested in an agreement to distribute aap's current products (and, if approved, the silver coating technology) via their sales channels. However, aap's management has reacted to the development in North America by strengthening the sales team and has already signed 12 new contracts with distributors. In view of this, aap expects more dynamic sales development in coming quarters.
- New guidance:** The guidance for FY sales was reduced to EUR 10.0-11.7m and for EBITDA to minus EUR -6.9 to -5.9m. Previously the company was guiding for sales of between EUR 13-15m and EBITDA of between minus EUR -5.0 to -3.4m, both rather at the lower end of the given range (WRe EBITDA: EUR 5.0m). The shortfall in earnings is explained by the missing US sales, increased costs of regulatory requirements in Germany, but also one-time costs of an undisclosed amount for strategic measures. The investments seem to be mainly related to the initiation of strategic projects with global partners and the development of the silver coating technology (antibacterial implants). In regard to the silver technology, aap is still in the process of preparing applications for a human clinical study for the relevant authorities. We expect news on this issue in the course of the detailed Q3 results presentation on November 14 at the latest.
- Buy rating reiterated, PT lowered to EUR 2.00:** As hopes had been pinned on accelerated growth in North America, the miss is clearly disappointing. The lower growth profile is reflected in a clear reduction of our DCF-derived PT to EUR 2.00 (from EUR 2.40). However, positive is that all other regions are delivering strong growth. After nine months, Germany recorded +12% sales growth and the region International (+28%) benefited not only from ongoing high growth but also from new customers. Based on the success outside North America, we are confident that management will also be able to develop the North American region as a future growth market. In view of this and given that the current share price does not reflect any potential positive contribution from the silver coating technology the Buy rating is reiterated.

Changes in Estimates:				Comment on Changes:			
FY End: 31.12. in EUR m	2018e (old)	+ / -	2019e (old)	+ / -	2020e (old)	+ / -	
Sales	13.4	-16.7 %	16.3	-7.3 %	19.6	-9.4 %	<ul style="list-style-type: none"> <li>We have incorporated the lower than expected growth in North America into our scenario.</li> <li>However, we expect aap to reach agreements with global distribution partners in 2019 and beyond.</li> <li>Our model assumes ongoing high growth in the International division and robust sales growth in Germany.</li> </ul>
EBITDA	-5.0	n.m.	-1.7	n.m.	0.0	n.m.	
EBT	-6.6	n.m.	-3.7	n.m.	-2.4	n.m.	
EPS	-0.17	n.m.	-0.09	n.m.	-0.06	n.m.	

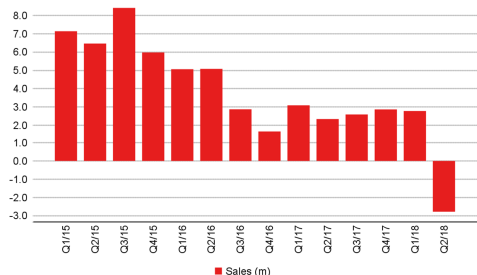


Rel. Performance vs CDAX:	
1 month:	-11.2 %
6 months:	-13.2 %
Year to date:	-13.6 %
Trailing 12 months:	-16.2 %

**Company events:**  
14.11.18 Q3

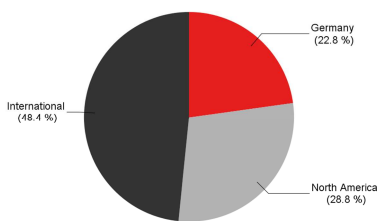
FY End: 31.12. in EUR m	CAGR (17-20e)	2014	2015	2016	2017	2018e	2019e	2020e
Sales	17.6 %	31.6	28.0	14.7	10.9	11.2	15.1	17.7
Change Sales yoy		-21.0 %	-11.4 %	-47.5 %	-25.8 %	2.4 %	35.5 %	17.1 %
EBITDA		2.3	-1.9	16.0	-6.2	-6.4	-3.6	-1.4
Margin		7.2 %	-6.7 %	109.0 %	-57.0 %	-57.3 %	-23.8 %	-7.7 %
EBITDA adj.		2.3	-1.9	-7.9	-6.2	-6.4	-3.6	-1.4
Margin		7.2 %	-6.7 %	-53.7 %	-57.0 %	-57.3 %	-23.8 %	-7.7 %
EBIT		0.0	-4.9	13.7	-8.0	-7.8	-5.6	-3.7
Margin		-0.1 %	-17.5 %	93.4 %	-73.3 %	-70.3 %	-36.8 %	-20.7 %
Net income		-0.5	-5.3	14.6	-8.9	-5.6	-3.9	-2.6
EPS		-0.01	-0.17	0.47	-0.31	-0.19	-0.14	-0.09
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		-0.26	-0.02	-0.30	-0.26	-0.20	-0.20	-0.08
FCF / Market cap		-7.3 %	-1.0 %	-22.5 %	-17.9 %	-14.8 %	-14.9 %	-6.0 %
EV / Sales		2.4 x	1.9 x	1.3 x	2.7 x	2.8 x	2.5 x	2.2 x
EV / EBITDA		33.5 x	n.a.	1.2 x	n.a.	n.a.	n.a.	n.a.
EV / EBIT		n.a.	n.a.	1.4 x	n.a.	n.a.	n.a.	n.a.
P / E		n.a.	n.a.	2.8 x	n.a.	n.a.	n.a.	n.a.
FCF Potential Yield		-0.4 %	-8.3 %	73.4 %	-25.9 %	-17.9 %	-10.8 %	-6.7 %
Net Debt		-7.8	-15.0	-21.5	-12.2	-6.5	-0.8	1.5
ROCE (NOPAT)		n.a.	n.a.	48.8 %	n.a.	n.a.	n.a.	n.a.
Guidance:		Sales EUR 10.0-11.7m, EBITDA EUR -6.9 to -5.9m						

**Sales development**  
in EUR m



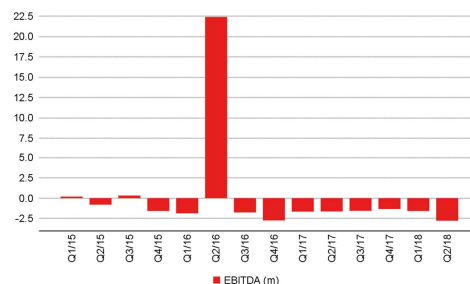
Source: Warburg Research

**Sales by regions**  
2017; in %



Source: Warburg Research

**EBITDA development**  
in EUR m



Source: Warburg Research

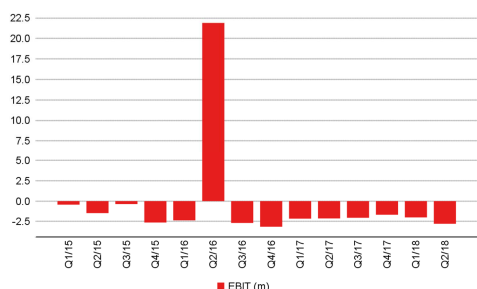
## Company Background

- aap Implantate AG develops, produces and sells medical implants, which are primarily used in orthopaedics to mend fractures.
- The company covers the entire value chain and sells the products worldwide with the focus on established markets as North America, Germany as well as further European countries.
- The products are sold by direct sale, international sales partners or OEMs.
- aap Implantate AG was founded in 1990 as a MBO from the Johnson & Johnson Group and is headquartered in Berlin.

## Competitive Quality

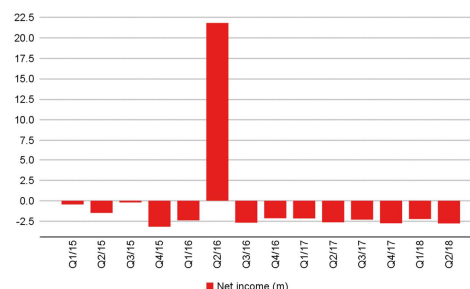
- aap Implantate AG has developed a patent protected anatomical plating system (LOQTEQ), which provides significant improvements for surgeons, hospitals and clinics as well as patients.
- Additionally aap has a promising development pipeline with an antibacterial silver coating for the implants as well as coated magnesium implants.
- The sale of the subsidiary aap Biomaterials has provided the company with sufficient financial funds to grow organically and inorganically.

**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
	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e	
Sales	11.2	15.1	17.7	24.5	32.8	36.4	40.1	43.6	46.7	49.7	52.3	54.5	56.1	
Sales change	2.4 %	35.5 %	17.1 %	38.0 %	34.0 %	11.1 %	10.1 %	8.7 %	7.2 %	6.2 %	5.3 %	4.2 %	3.0 %	2.5 %
EBIT	-7.8	-5.6	-3.7	-0.8	3.4	4.6	5.8	6.9	7.9	8.9	9.8	11.3	11.7	
EBIT-margin	-70.3 %	-36.8 %	-20.7 %	-3.2 %	10.3 %	12.5 %	14.4 %	15.9 %	17.0 %	17.9 %	18.7 %	20.8 %	20.8 %	
Tax rate (EBT)	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	28.0 %	
NOPAT	-5.6	-4.0	-2.6	-0.6	2.4	3.3	4.1	5.0	5.7	6.4	7.0	8.2	8.4	
Depreciation	1.5	2.0	2.3	2.9	3.4	3.6	3.6	3.6	3.6	3.6	3.6	3.5	3.5	
in % of Sales	13.0 %	13.0 %	13.0 %	11.8 %	10.4 %	9.8 %	8.9 %	8.2 %	7.6 %	7.2 %	6.8 %	6.4 %	6.2 %	
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	
Change in Liquidity from														
- Working Capital	-0.2	2.0	0.3	0.2	0.4	1.5	1.5	1.4	1.3	1.2	1.0	0.9	0.7	
- Capex	1.7	1.7	1.7	2.4	2.2	2.4	2.6	2.8	3.0	3.1	3.2	3.3	3.4	
Capex in % of Sales	15.5 %	11.4 %	9.8 %	10.0 %	6.8 %	6.6 %	6.4 %	6.4 %	6.4 %	6.3 %	6.2 %	6.1 %	6.0 %	
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)	-5.7	-5.8	-2.4	-0.3	3.2	3.0	3.7	4.3	5.0	5.7	6.3	7.4	7.9	9
PV of FCF	-5.7	-5.2	-2.0	-0.3	2.2	1.9	2.1	2.2	2.4	2.4	2.5	2.6	2.5	38
share of PVs	<b>-28.00 %</b>			<b>44.90 %</b>										<b>83.10 %</b>

**Model parameter**

Derivation of WACC:		Derivation of Beta:	
Debt ratio	15.00 %	Financial Strength	1.80
Cost of debt (after tax)	6.8 %	Liquidity (share)	1.80
Market return	7.00 %	Cyclicality	1.20
Risk free rate	1.50 %	Transparency	1.40
		Others	1.80
<b>WACC</b>	<b>9.77 %</b>	<b>Beta</b>	<b>1.60</b>

**Valuation (m)**

Present values 2030e	8		
Terminal Value	38		
Financial liabilities	1		
Pension liabilities	0		
Hybrid capital	0		
Minority interest	0		
Market val. of investments	0		
Liquidity	13	No. of shares (m)	28.6
<b>Equity Value</b>	<b>58</b>	<b>Value per share (EUR)</b>	<b>2.03</b>

**Sensitivity Value per Share (EUR)**

Beta	WACC	Terminal Growth							Beta	WACC	Delta EBIT-margin						
		1.75 %	2.00 %	2.25 %	<b>2.50 %</b>	2.75 %	3.00 %	3.25 %			-1.5 pp	-1.0 pp	-0.5 pp	<b>+0.0 pp</b>	+0.5 pp	+1.0 pp	+1.5 pp
<b>1.81</b>	10.8 %	1.61	1.64	1.67	1.70	1.73	1.76	1.80	<b>1.81</b>	10.8 %	1.53	1.59	1.64	1.70	1.75	1.81	1.86
<b>1.71</b>	10.3 %	1.75	1.78	1.81	1.85	1.89	1.93	1.98	<b>1.71</b>	10.3 %	1.67	1.73	1.79	1.85	1.91	1.97	2.03
<b>1.65</b>	10.0 %	1.82	1.86	1.90	1.94	1.98	2.03	2.07	<b>1.65</b>	10.0 %	1.75	1.81	1.87	1.94	2.00	2.06	2.12
<b>1.60</b>	9.8 %	1.90	1.94	1.98	<b>2.03</b>	2.08	2.13	2.18	<b>1.60</b>	9.8 %	1.84	1.90	1.96	<b>2.03</b>	2.09	2.15	2.22
<b>1.55</b>	9.5 %	1.99	2.03	2.08	2.13	2.18	2.24	2.30	<b>1.55</b>	9.5 %	1.93	1.99	2.06	2.13	2.19	2.26	2.33
<b>1.49</b>	9.3 %	2.08	2.13	2.18	2.23	2.29	2.35	2.42	<b>1.49</b>	9.3 %	2.03	2.10	2.16	2.23	2.30	2.37	2.44
<b>1.39</b>	8.8 %	2.29	2.35	2.41	2.47	2.55	2.62	2.71	<b>1.39</b>	8.8 %	2.25	2.32	2.40	2.47	2.55	2.62	2.70

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

Valuation							
	2014	2015	2016	2017	2018e	2019e	2020e
Price / Book	1.9 x	1.7 x	0.7 x	1.0 x	1.0 x	1.2 x	1.3 x
Book value per share ex intangibles	0.99	0.97	1.42	1.07	0.86	0.72	0.62
EV / Sales	2.4 x	1.9 x	1.3 x	2.7 x	2.8 x	2.5 x	2.2 x
EV / EBITDA	33.5 x	n.a.	1.2 x	n.a.	n.a.	n.a.	n.a.
EV / EBIT	n.a.	n.a.	1.4 x	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.	n.a.	2.8 x	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)	-0.4 %	-8.3 %	73.4 %	-25.9 %	-17.9 %	-10.8 %	-6.7 %

\*Adjustments made for: -

**Consolidated profit & loss**

In EUR m	2014	2015	2016	2017	2018e	2019e	2020e
<b>Sales</b>	<b>31.6</b>	<b>28.0</b>	<b>14.7</b>	<b>10.9</b>	<b>11.2</b>	<b>15.1</b>	<b>17.7</b>
Change Sales yoy	-21.0 %	-11.4 %	-47.5 %	-25.8 %	2.4 %	35.5 %	17.1 %
Increase / decrease in inventory	2.1	3.8	1.3	-0.5	0.0	0.0	0.0
Own work capitalised	0.3	2.1	1.4	1.3	0.9	1.2	1.4
<b>Total Sales</b>	<b>34.0</b>	<b>33.9</b>	<b>17.4</b>	<b>11.7</b>	<b>12.1</b>	<b>16.3</b>	<b>19.1</b>
Material expenses	12.3	13.7	5.7	1.9	2.0	4.5	5.1
<b>Gross profit</b>	<b>21.7</b>	<b>20.2</b>	<b>11.6</b>	<b>9.8</b>	<b>10.0</b>	<b>11.8</b>	<b>14.0</b>
<i>Gross profit margin</i>	<i>68.8 %</i>	<i>72.2 %</i>	<i>79.1 %</i>	<i>89.9 %</i>	<i>90.0 %</i>	<i>78.0 %</i>	<i>79.0 %</i>
Personnel expenses	12.2	11.9	10.0	7.4	8.5	8.0	8.0
Other operating income	3.1	1.6	24.3	0.8	1.6	1.6	1.6
Other operating expenses	10.3	11.8	10.0	9.4	9.5	9.0	9.0
Unfrequent items	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>EBITDA</b>	<b>2.3</b>	<b>-1.9</b>	<b>16.0</b>	<b>-6.2</b>	<b>-6.4</b>	<b>-3.6</b>	<b>-1.4</b>
<i>Margin</i>	<i>7.2 %</i>	<i>-6.7 %</i>	<i>109.0 %</i>	<i>-57.0 %</i>	<i>-57.3 %</i>	<i>-23.8 %</i>	<i>-7.7 %</i>
Depreciation of fixed assets	0.8	1.6	1.1	1.2	0.9	1.2	1.4
<b>EBITA</b>	<b>1.5</b>	<b>-3.5</b>	<b>14.9</b>	<b>-7.4</b>	<b>-7.3</b>	<b>-4.8</b>	<b>-2.8</b>
Amortisation of intangible assets	1.5	0.9	1.1	0.6	0.6	0.8	0.9
Goodwill amortisation	0.0	0.5	0.0	0.0	0.0	0.0	0.0
<b>EBIT</b>	<b>0.0</b>	<b>-4.9</b>	<b>13.7</b>	<b>-8.0</b>	<b>-7.8</b>	<b>-5.6</b>	<b>-3.7</b>
<i>Margin</i>	<i>-0.1 %</i>	<i>-17.5 %</i>	<i>93.4 %</i>	<i>-73.3 %</i>	<i>-70.3 %</i>	<i>-36.8 %</i>	<i>-20.7 %</i>
<b>EBIT adj.</b>	<b>0.0</b>	<b>-4.9</b>	<b>-10.2</b>	<b>-8.0</b>	<b>-7.8</b>	<b>-5.6</b>	<b>-3.7</b>
Interest income	0.0	0.0	0.0	0.0	0.3	0.3	0.3
Interest expenses	0.1	0.0	0.0	0.0	0.2	0.2	0.2
Other financial income (loss)	0.0	-0.4	0.3	-1.3	0.0	0.0	0.0
<b>EBT</b>	<b>-0.2</b>	<b>-5.3</b>	<b>14.0</b>	<b>-9.3</b>	<b>-7.7</b>	<b>-5.5</b>	<b>-3.6</b>
<i>Margin</i>	<i>-0.6 %</i>	<i>-19.1 %</i>	<i>95.6 %</i>	<i>-85.3 %</i>	<i>-69.4 %</i>	<i>-36.1 %</i>	<i>-20.1 %</i>
Total taxes	0.3	0.0	-0.6	0.0	-2.2	-1.5	-1.0
<b>Net income from continuing operations</b>	<b>-0.5</b>	<b>-5.3</b>	<b>14.6</b>	<b>-9.3</b>	<b>-5.6</b>	<b>-3.9</b>	<b>-2.6</b>
Income from discontinued operations (net of tax)	0.0	0.0	-0.1	0.3	0.0	0.0	0.0
<b>Net income before minorities</b>	<b>-0.5</b>	<b>-5.3</b>	<b>14.6</b>	<b>-8.9</b>	<b>-5.6</b>	<b>-3.9</b>	<b>-2.6</b>
Minority interest	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Net income</b>	<b>-0.5</b>	<b>-5.3</b>	<b>14.6</b>	<b>-8.9</b>	<b>-5.6</b>	<b>-3.9</b>	<b>-2.6</b>
<i>Margin</i>	<i>-1.4 %</i>	<i>-19.1 %</i>	<i>99.2 %</i>	<i>-82.0 %</i>	<i>-49.9 %</i>	<i>-26.0 %</i>	<i>-14.5 %</i>
Number of shares, average	30.7	30.7	30.8	28.6	28.6	28.6	28.6
<b>EPS</b>	<b>-0.01</b>	<b>-0.17</b>	<b>0.47</b>	<b>-0.31</b>	<b>-0.19</b>	<b>-0.14</b>	<b>-0.09</b>
EPS adj.	-0.01	-0.17	-0.30	-0.31	-0.19	-0.14	-0.09

\*Adjustments made for:

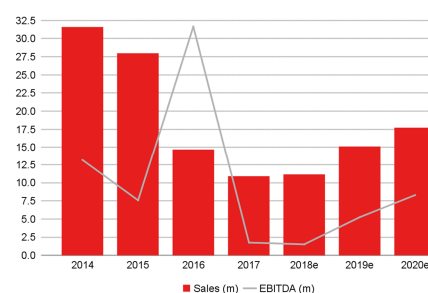
**Guidance: Sales EUR 10.0-11.7m, EBITDA EUR -6.9 to -5.9m**

**Financial Ratios**

	2014	2015	2016	2017	2018e	2019e	2020e
Total Operating Costs / Sales	100.4 %	127.9 %	9.2 %	164.0 %	165.3 %	131.8 %	115.7 %
Operating Leverage	4.7 x	-922.7 x	n.a.	n.a.	-0.8 x	-0.8 x	-2.0 x
EBITDA / Interest expenses	28.8 x	n.m.	800.5 x	n.m.	n.m.	n.m.	n.m.
Tax rate (EBT)	-162.1 %	-0.2 %	-4.2 %	0.3 %	28.0 %	28.0 %	28.0 %
Dividend Payout Ratio	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Sales per Employee	213,473	156,302	94,755	75,186	76,972	104,327	122,200

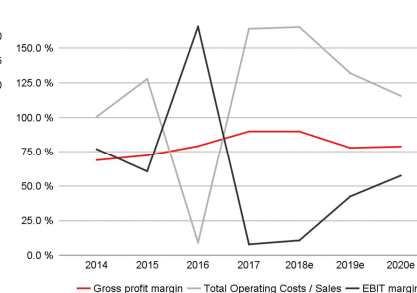
**Sales, EBITDA**

in EUR m

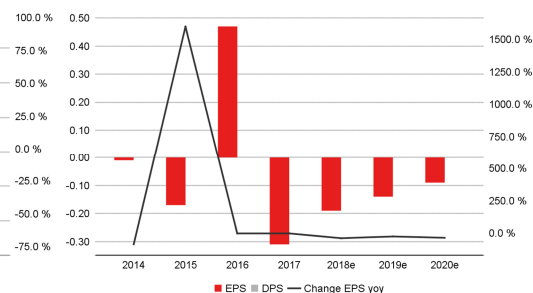


**Operating Performance**

in %



**Performance per Share**



Source: Warburg Research

Source: Warburg Research

Source: Warburg Research

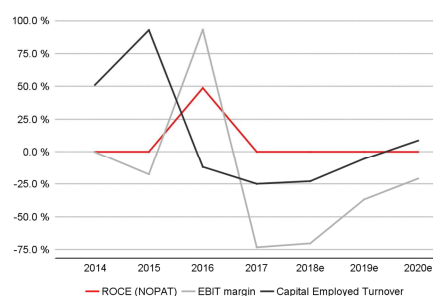
**Consolidated balance sheet**

In EUR m	2014	2015	2016	2017	2018e	2019e	2020e
<b>Assets</b>							
Goodwill and other intangible assets	15.2	10.4	11.1	11.8	11.7	11.7	11.7
thereof other intangible assets	0.5	0.5	0.1	0.1	0.0	0.0	0.0
thereof Goodwill	1.6	0.0	0.0	0.0	0.0	0.0	0.0
Property, plant and equipment	7.7	7.7	7.6	7.2	7.0	6.6	5.9
Financial assets	1.7	0.2	0.2	0.2	0.2	0.2	0.2
Other long-term assets	0.0	0.0	1.8	1.1	1.1	1.1	1.1
<b>Fixed assets</b>	<b>24.5</b>	<b>18.3</b>	<b>20.8</b>	<b>20.3</b>	<b>20.0</b>	<b>19.6</b>	<b>18.9</b>
Inventories	9.4	9.7	11.1	9.6	9.8	11.6	11.8
Accounts receivable	9.3	5.5	2.9	2.5	2.2	3.0	3.5
Liquid assets	12.2	19.6	23.8	13.3	7.6	5.9	7.6
Other short-term assets	2.4	1.8	5.3	4.7	4.7	4.7	4.7
<b>Current assets</b>	<b>33.3</b>	<b>36.6</b>	<b>43.1</b>	<b>30.2</b>	<b>24.4</b>	<b>25.2</b>	<b>27.6</b>
<b>Total Assets</b>	<b>57.9</b>	<b>54.9</b>	<b>63.9</b>	<b>50.5</b>	<b>44.4</b>	<b>44.8</b>	<b>46.5</b>
<b>Liabilities and shareholders' equity</b>							
Subscribed capital	30.7	30.7	30.8	28.6	28.6	28.6	28.6
Capital reserve	17.6	17.6	17.5	19.9	19.9	19.9	19.9
Retained earnings	0.7	0.9	15.2	12.1	6.5	2.5	0.0
Other equity components	-3.6	-8.9	-8.7	-18.0	-18.5	-18.8	-18.9
Shareholders' equity	45.4	40.3	54.8	42.6	36.5	32.2	29.6
Minority interest	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total equity</b>	<b>45.4</b>	<b>40.3</b>	<b>54.8</b>	<b>42.6</b>	<b>36.5</b>	<b>32.2</b>	<b>29.6</b>
Provisions	0.4	0.3	0.4	0.8	0.8	0.8	0.8
thereof provisions for pensions and similar obligations	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Financial liabilities (total)	4.3	4.6	2.3	1.1	1.1	5.0	9.0
thereof short-term financial liabilities	2.0	3.3	1.3	0.3	0.3	4.3	8.3
Accounts payable	2.9	4.1	2.5	1.8	1.8	2.4	2.8
Other liabilities	4.8	5.6	3.8	4.3	4.3	4.3	4.3
<b>Liabilities</b>	<b>12.4</b>	<b>14.6</b>	<b>9.1</b>	<b>7.9</b>	<b>8.0</b>	<b>12.5</b>	<b>16.9</b>
<b>Total liabilities and shareholders' equity</b>	<b>57.9</b>	<b>54.9</b>	<b>63.9</b>	<b>50.5</b>	<b>44.4</b>	<b>44.8</b>	<b>46.5</b>

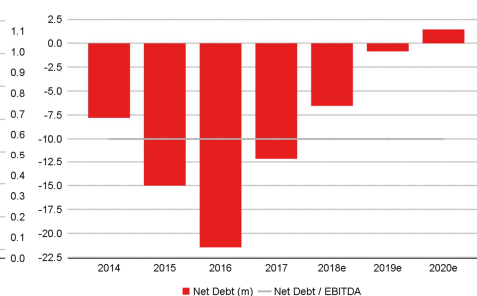
**Financial Ratios**

	2014	2015	2016	2017	2018e	2019e	2020e
<b>Efficiency of Capital Employment</b>							
Operating Assets Turnover	1.3 x	1.5 x	0.8 x	0.6 x	0.6 x	0.8 x	1.0 x
Capital Employed Turnover	0.8 x	1.1 x	0.4 x	0.4 x	0.4 x	0.5 x	0.6 x
ROA	-1.9 %	-29.2 %	70.2 %	-44.0 %	-27.8 %	-20.1 %	-13.6 %
<b>Return on Capital</b>							
ROCE (NOPAT)	n.a.	n.a.	48.8 %	n.a.	n.a.	n.a.	n.a.
ROE	-1.0 %	-12.5 %	30.7 %	-18.4 %	-14.1 %	-11.5 %	-8.3 %
Adj. ROE	-1.0 %	-12.5 %	-19.6 %	-18.4 %	-14.1 %	-11.5 %	-8.3 %
<b>Balance sheet quality</b>							
Net Debt	-7.8	-15.0	-21.5	-12.2	-6.5	-0.8	1.5
Net Financial Debt	-7.9	-15.0	-21.5	-12.2	-6.5	-0.8	1.5
Net Gearing	-17.2 %	-37.2 %	-39.2 %	-28.7 %	-18.0 %	-2.6 %	4.9 %
Net Fin. Debt / EBITDA	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Book Value / Share	1.5	1.3	1.8	1.5	1.3	1.1	1.0
Book value per share ex intangibles	1.0	1.0	1.4	1.1	0.9	0.7	0.6

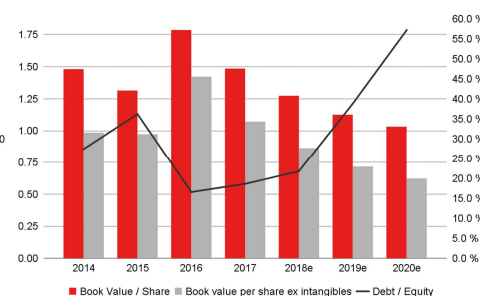
**ROCE Development**



**Net debt in EUR m**



**Book Value per Share in EUR**



Source: Warburg Research

Source: Warburg Research

Source: Warburg Research

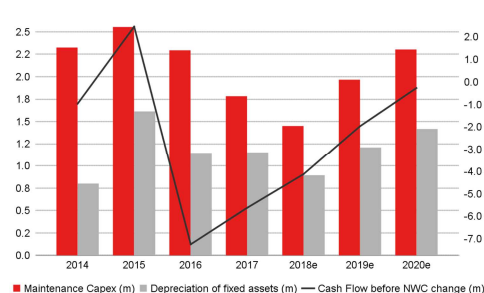
**Consolidated cash flow statement**

In EUR m	2014	2015	2016	2017	2018e	2019e	2020e
Net income	-0.5	-5.3	14.6	-9.3	-5.6	-3.9	-2.6
Depreciation of fixed assets	0.8	1.6	1.1	1.2	0.9	1.2	1.4
Amortisation of goodwill	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Amortisation of intangible assets	1.5	0.9	1.1	0.6	0.6	0.8	0.9
Increase/decrease in long-term provisions	0.2	0.0	0.4	0.3	0.0	0.0	0.0
Other non-cash income and expenses	-3.0	4.8	-24.6	1.5	0.0	0.0	0.0
<b>Cash Flow before NWC change</b>	<b>-1.0</b>	<b>2.5</b>	<b>-7.2</b>	<b>-5.6</b>	<b>-4.1</b>	<b>-2.0</b>	<b>-0.3</b>
Increase / decrease in inventory	-2.0	0.0	0.1	0.1	-0.2	-1.8	-0.2
Increase / decrease in accounts receivable	0.0	0.0	0.0	0.0	0.3	-0.8	-0.5
Increase / decrease in accounts payable	0.0	0.0	0.0	0.0	0.0	0.6	0.4
Increase / decrease in other working capital positions	0.0	0.0	-0.1	0.1	0.0	0.0	0.0
Increase / decrease in working capital (total)	-2.0	0.0	0.0	0.2	0.2	-2.0	-0.3
<b>Net cash provided by operating activities [1]</b>	<b>-2.9</b>	<b>2.5</b>	<b>-7.2</b>	<b>-5.4</b>	<b>-3.9</b>	<b>-4.0</b>	<b>-0.6</b>
Investments in intangible assets	-2.0	0.0	-1.0	-1.3	-1.0	-1.0	-1.0
Investments in property, plant and equipment	-1.2	-3.1	-1.0	-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	18.3	0.1	31.9	0.5	0.0	0.0	0.0
<b>Net cash provided by investing activities [2]</b>	<b>13.2</b>	<b>-3.1</b>	<b>29.8</b>	<b>-1.5</b>	<b>-1.7</b>	<b>-1.7</b>	<b>-1.7</b>
Change in financial liabilities	-0.6	-1.1	-2.3	-1.4	0.0	4.0	4.0
Dividends paid	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Purchase of own shares	0.0	0.0	0.0	-3.4	0.0	0.0	0.0
Capital measures	0.0	0.2	0.0	0.1	0.0	0.0	0.0
Other	0.0	-1.0	-2.3	1.2	0.0	0.0	0.0
<b>Net cash provided by financing activities [3]</b>	<b>-0.6</b>	<b>-1.9</b>	<b>-4.6</b>	<b>-3.5</b>	<b>0.0</b>	<b>4.0</b>	<b>4.0</b>
<b>Change in liquid funds [1]+[2]+[3]</b>	<b>9.7</b>	<b>-2.5</b>	<b>18.1</b>	<b>-10.5</b>	<b>-5.6</b>	<b>-1.7</b>	<b>1.7</b>
Effects of exchange-rate changes on cash	0.0	0.0	0.8	0.0	0.0	0.0	0.0
Cash and cash equivalent at end of period	12.2	9.7	23.8	13.3	7.6	5.9	7.6

**Financial Ratios**

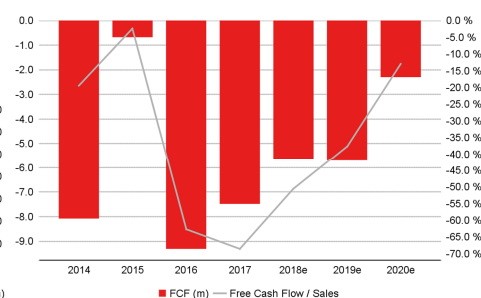
	2014	2015	2016	2017	2018e	2019e	2020e
<b>Cash Flow</b>							
FCF	-8.1	-0.7	-9.3	-7.5	-5.6	-5.7	-2.3
Free Cash Flow / Sales	-19.4 %	-2.4 %	-62.7 %	-68.6 %	-50.6 %	-37.7 %	-13.0 %
Free Cash Flow Potential	-0.3	-4.4	14.3	-7.6	-5.7	-4.0	-2.7
Free Cash Flow / Net Profit	1347.6 %	12.7 %	-63.1 %	83.6 %	101.3 %	144.8 %	89.4 %
Interest Received / Avg. Cash	0.0 %	0.0 %	0.1 %	0.0 %	2.9 %	4.4 %	4.4 %
Interest Paid / Avg. Debt	1.8 %	0.8 %	0.6 %	2.8 %	18.5 %	6.5 %	2.8 %
<b>Management of Funds</b>							
Investment ratio	10.1 %	11.2 %	13.6 %	18.8 %	15.5 %	11.4 %	9.8 %
Maint. Capex / Sales	7.4 %	9.1 %	15.6 %	16.4 %	13.0 %	13.0 %	13.0 %
Capex / Dep	137.6 %	103.9 %	87.2 %	114.8 %	119.4 %	88.1 %	75.2 %
Avg. Working Capital / Sales	46.5 %	48.0 %	76.8 %	100.2 %	92.3 %	74.0 %	69.7 %
Trade Debtors / Trade Creditors	315.3 %	134.5 %	115.5 %	145.1 %	122.2 %	125.0 %	125.0 %
Inventory Turnover	1.3 x	1.4 x	0.5 x	0.2 x	0.2 x	0.4 x	0.4 x
Receivables collection period (days)	107	72	73	85	72	72	72
Payables payment period (days)	88	109	162	342	327	193	199
Cash conversion cycle (Days)	299	221	614	1,619	1,525	812	711

**CAPEX and Cash Flow**  
in EUR m



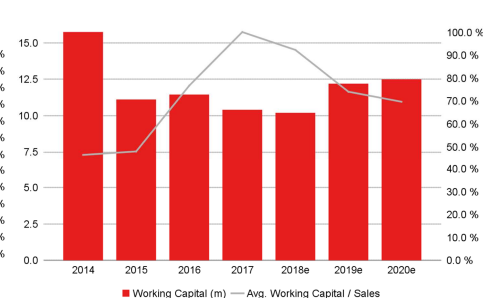
Source: Warburg Research

**Free Cash Flow Generation**



Source: Warburg Research

**Working Capital**



Source: Warburg Research

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Investment recommendation: expected direction of the share price development of the financial instrument up to the given price target in the opinion of the analyst who covers this financial instrument.

-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.

**WARBURG RESEARCH GMBH – ANALYSED RESEARCH UNIVERSE BY RATING**

Rating	Number of stocks	% of Universe
Buy	125	61
Hold	69	34
Sell	3	1
Rating suspended	7	3
<b>Total</b>	<b>204</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	34	72
Hold	11	23
Sell	0	0
Rating suspended	2	4
<b>Total</b>	<b>47</b>	<b>100</b>

**PRICE AND RATING HISTORY AAP IMPLANTATE AS OF 07.11.2018**



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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