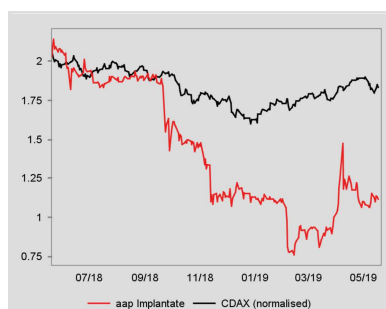


Buy EUR 2.00 Price EUR 1.12 Upside 79.4 %	Value Indicators: EUR DCF: 1.98	Share data: Bloomberg: AAQ GR Reuters: AAQG.DE ISIN: DE0005066609	Description: Producer of implants to mend broken bones
	Market Snapshot: EUR m Market cap: 35.8 No. of shares (m): 32.1 EV: 34.1 Freefloat MC: 16.2 Ø Trad. Vol. (30d): 19.51 th	Shareholders: Freefloat 45.2 % Ratio Capital Management 15.8 % Noes Beheer B.V. 11.7 % Jürgen W. Krebs 9.9 % Taaleritehdas 6.8 %	Risk Profile (WRe): 2019e Beta: 1.6 Price / Book: 1.1 x Equity Ratio: 77 %

Capital increase successfully concluded; Well prepared to deliver on guidance

- **Capital increase successful, cash inflow of approx. EUR 3.5m secured:** aap Implantate announced on May 10 that it had successfully completed the capital increase. The company's share capital was increased by issuing a total of 3,360,467 new shares against cash contribution to EUR 32,067,377. Based on the subscription price of EUR 1.04 per new share the gross proceeds are approx. EUR 3.5m. With the cash inflow from the capital increase and two further external financings, aap now has an additional EUR 5.2m to finance the further development of its innovative antibacterial silver coating technology and planned sales growth of its established LOQTEQ plating system.
- **Development of antibacterial silver coating technology progressing according to plan:** aap confirmed during its Q1 reporting that it is in ongoing constructive discussion with the German regulator BfArM regarding the required human clinical study. The company submitted an application at the end of last year to conduct a human clinical study. aap still aims to start the human clinical study mid-year. Furthermore management confirmed a high level of interest from global orthopaedic companies in its innovative coating technology.
- **Q1 got the year off to a good start, confirming the business case:** aap published final Q1 results on May 13. Sales were up 26% to EUR 3.5m. Sales growth momentum was maintained in Germany (+15% y-o-y). There was strong growth of +28% in International (excl. North America) and 22% in North America. There was a strong improvement in EBITDA to minus EUR 998 (Q1 2018: minus EUR 1.6m) as a result of the focus on high-margin markets and disciplined cost management. The gross margin improved to 85% from 79% in the previous year's quarter.
- **Buy rating reiterated, unchanged PT of EUR 2.00:** Q1 was a confirmation of the underlying business case. Furthermore, following the successful capital increase and further measures, the company in a good financial position to perform the planned human clinical study. aap has EUR 7.9m available cash (EUR 2.7m cash and cash equivalents and EUR 5.2m from financing measures) and additional approx. EUR 2m restricted cash, which shall be released by concluding legal disputes in 2019. The cash need totaled EUR 1.6m in Q1. If development of the underlying operating business proceeds according to plan, the human clinical study is financed. We have introduced our estimates for 2021. As a consequence the DCF-derived PT benefited from roll-forward effects, nearly offsetting the effect of the increased number of shares outstanding. In view of this our PT remains unchanged at EUR 2.00, including the assumption of successful development of the silver coating technology. Excluding the antibacterial coating technology, we derive a DCF value of ~EUR 1.50. Buy rating reiterated.

Changes in Estimates:							Comment on Changes:
FY End: 31.12. in EUR m	2019e (old)	+ / -	2020e (old)	+ / -	2021e (old)	+ / -	
Sales	14.0	0.0 %	17.9	0.0 %	n.a.	n.m.	<ul style="list-style-type: none"> Estimates for 2019 and 2020 unchanged following the presentation of detailed Q1 results. aap is on track to deliver on its FY guidance. Capital increase worked in. Estimates for 2021 introduced.
EBITDA	-3.6	0.0 %	-1.8	0.0 %	n.a.	n.m.	
EBT	-5.3	0.0 %	-4.0	0.0 %	n.a.	n.m.	
EPS	-0.18	n.m.	-0.14	n.m.	n.a.	n.m.	

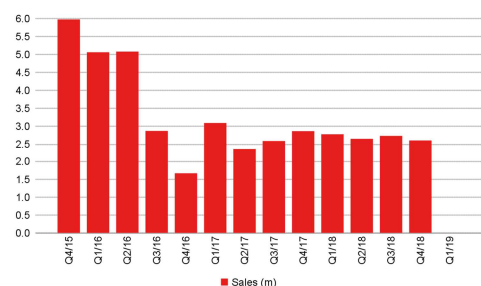


Rel. Performance vs CDAX:	
1 month:	-2.6 %
6 months:	-5.6 %
Year to date:	-14.1 %
Trailing 12 months:	-35.4 %

Company events:	
21.06.19	AGM
14.08.19	Q2
14.11.19	Q3

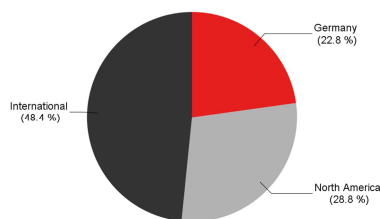
FY End: 31.12. in EUR m	CAGR (18-21e)	2015	2016	2017	2018	2019e	2020e	2021e
Sales	26.6 %	28.0	14.7	10.9	10.8	14.0	17.9	21.9
Change Sales yoy		-11.4 %	-47.5 %	-25.8 %	-1.1 %	30.3 %	27.3 %	22.3 %
EBITDA	-	-1.9	16.0	-6.2	-6.4	-3.6	-1.8	0.1
Margin		-6.7 %	109.0 %	-57.0 %	-59.5 %	-25.4 %	-9.9 %	0.5 %
EBITDA adj.		-1.9	-7.9	-6.2	-6.4	-3.6	-1.8	0.1
Margin		-6.7 %	-53.7 %	-57.0 %	-59.5 %	-25.4 %	-9.9 %	0.5 %
EBIT	-	-4.9	13.7	-8.0	-8.1	-5.4	-4.1	-2.7
Margin		-17.5 %	93.4 %	-73.3 %	-75.5 %	-38.4 %	-22.9 %	-12.5 %
Net income	-	-5.3	14.6	-8.9	-7.8	-5.2	-3.9	-2.5
EPS	-	-0.17	0.47	-0.31	-0.27	-0.17	-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	-0.19	-0.14	-0.13
FCF / Market cap		-1.0 %	-22.5 %	-17.9 %	-17.8 %	-16.1 %	-12.3 %	-11.5 %
EV / Sales		1.9 x	1.3 x	2.7 x	4.2 x	2.4 x	2.2 x	2.0 x
EV / EBITDA		n.a.	1.2 x	n.a.	n.a.	n.a.	n.a.	415.8 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 %	-15.5 %	-10.4 %	-6.2 %
Net Debt		-15.0	-21.5	-12.2	-3.9	-1.6	2.8	6.9
ROCE (NOPAT)		n.a.	48.8 %	n.a.	n.a.	n.a.	n.a.	n.a.
Guidance:	Sales EUR 13.0-15.0m, EBITDA EUR -4.4 to -2.8m							

Sales development
in EUR m



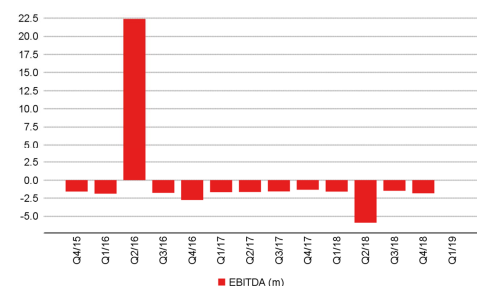
Source: Warburg Research

Sales by regions
2017; in %



Source: Warburg Research

EBITDA development
in EUR m



Source: Warburg Research

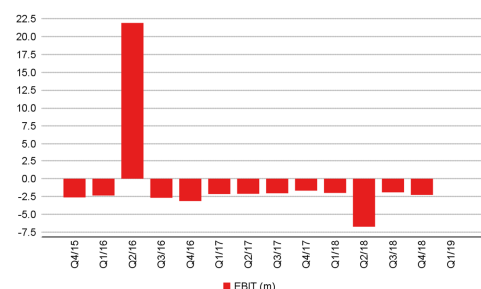
Company Background

- aap Implantate AG develops, produces and sells medical implants, which are primarily used in orthopaedics to mend fractures.
- 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

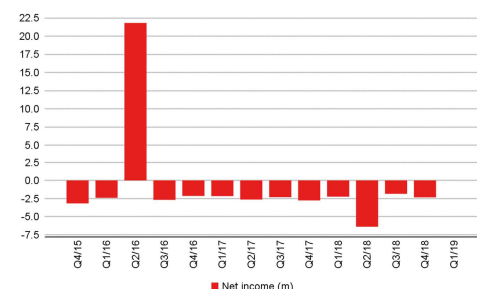
- aap Implantate AG has developed a patent protected anatomical plating system (LOQTEQ), which provides significant improvements for surgeons, hospitals and clinics as well as patients.
- Additionally aap has a promising development pipeline with an antibacterial silver coating for the implants as well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

EBIT development
in EUR m



Source: Warburg Research

Net income development
in EUR m



Source: Warburg Research

DCF model

	Detailed forecast period			Transitional period										Term. Value
Figures in EUR m	2019e	2020e	2021e	2022e	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e	2031e	
Sales	14.0	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	30.3 %	27.3 %	22.3 %	39.2 %	28.8 %	8.5 %	6.8 %	6.4 %	5.5 %	5.3 %	4.7 %	4.0 %	3.3 %	
EBIT	-5.4	-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	-38.4 %	-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)	1.9 %	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
NOPAT	-5.3	-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	1.8	2.3	2.8	3.7	4.5	4.4	4.2	4.0	3.7	3.4	2.8	2.3	1.8	39
in % of Sales	13.0 %	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	69.68 %
Change in Liquidity from														
- Working Capital	0.7	1.1	2.7	1.2	-0.2	1.3	1.2	1.2	1.1	1.1	1.0	0.9	0.8	53.01 %
- Capex	1.7	1.7	1.7	2.2	2.5	2.2	2.2	2.1	2.0	1.8	1.8	1.8	1.8	
Capex in % of Sales	12.3 %	9.7 %	7.9 %	7.3 %	6.4 %	5.2 %	4.8 %	4.3 %	3.9 %	3.4 %	3.2 %	3.0 %	3.0 %	-22.69 %
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)	-5.9	-4.5	-4.2	1.9	5.8	5.4	6.1	6.6	7.2	7.6	8.4	8.4	8.3	69.68 %
PV of FCF	-5.5	-3.9	-3.3	1.4	3.8	3.2	3.3	3.2	3.2	3.1	3.1	2.9	2.6	
share of PVs	-22.69 %			53.01 %										69.68 %

Model parameter

Derivation of WACC:		Derivation of Beta:	
Debt ratio	15.00 %	Financial Strength	2.40
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	1.20
WACC	9.77 %	Beta	1.60

Valuation (m)

Present values 2031e	17		
Terminal Value	39		
Financial liabilities	0		
Pension liabilities	0		
Hybrid capital	0		
Minority interest	0		
Market val. of investments	0		
Liquidity	8	No. of shares (m)	32.1
Equity Value	64	Value per share (EUR)	1.98

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 %	1.58	1.61	1.63	1.66	1.69	1.72	1.76	1.81	10.8 %	1.50	1.55	1.61	1.66	1.71	1.77	1.82
1.71	10.3 %	1.72	1.75	1.78	1.81	1.85	1.88	1.93	1.71	10.3 %	1.64	1.70	1.75	1.81	1.87	1.93	1.98
1.65	10.0 %	1.79	1.82	1.86	1.89	1.93	1.98	2.02	1.65	10.0 %	1.72	1.78	1.83	1.89	1.95	2.01	2.07
1.60	9.8 %	1.87	1.91	1.94	1.98	2.03	2.07	2.12	1.60	9.8 %	1.80	1.86	1.92	1.98	2.05	2.11	2.17
1.55	9.5 %	1.95	1.99	2.04	2.08	2.13	2.18	2.24	1.55	9.5 %	1.89	1.95	2.02	2.08	2.14	2.21	2.27
1.49	9.3 %	2.05	2.09	2.13	2.18	2.24	2.30	2.36	1.49	9.3 %	1.98	2.05	2.12	2.18	2.25	2.32	2.38
1.39	8.8 %	2.25	2.30	2.36	2.42	2.48	2.56	2.63	1.39	8.8 %	2.20	2.27	2.35	2.42	2.49	2.56	2.64

- 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.

Valuation	2015	2016	2017	2018	2019e	2020e	2021e
Price / Book	1.7 x	0.7 x	1.0 x	1.4 x	1.1 x	1.2 x	1.4 x
Book value per share ex intangibles	0.97	1.42	1.07	0.75	0.61	0.49	0.41
EV / Sales	1.9 x	1.3 x	2.7 x	4.2 x	2.4 x	2.2 x	2.0 x
EV / EBITDA	n.a.	1.2 x	n.a.	n.a.	n.a.	n.a.	415.8 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 %	-15.5 %	-10.4 %	-6.2 %
*Adjustments made for: -							

Consolidated profit & loss

In EUR m	2015	2016	2017	2018	2019e	2020e	2021e
Sales	28.0	14.7	10.9	10.8	14.0	17.9	21.9
Change Sales yoy	-11.4 %	-47.5 %	-25.8 %	-1.1 %	30.3 %	27.3 %	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	1.1	1.1	1.7
Total Sales	33.9	17.4	11.7	12.6	15.2	18.9	23.6
Material expenses	13.7	5.7	1.9	2.3	2.5	3.2	3.9
Gross profit	20.2	11.6	9.8	10.3	12.6	15.7	19.7
Gross profit margin	72.2 %	79.1 %	89.9 %	95.5 %	90.0 %	88.0 %	90.0 %
Personnel expenses	11.9	10.0	7.4	7.8	8.8	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
EBITDA	-1.9	16.0	-6.2	-6.4	-3.6	-1.8	0.1
Margin	-6.7 %	109.0 %	-57.0 %	-59.5 %	-25.4 %	-9.9 %	0.5 %
Depreciation of fixed assets	1.6	1.1	1.2	1.1	1.1	1.4	1.7
EBITA	-3.5	14.9	-7.4	-7.5	-4.7	-3.2	-1.6
Amortisation of intangible assets	0.9	1.1	0.6	0.7	0.7	0.9	1.1
Goodwill amortisation	0.5	0.0	0.0	0.0	0.0	0.0	0.0
EBIT	-4.9	13.7	-8.0	-8.1	-5.4	-4.1	-2.7
Margin	-17.5 %	93.4 %	-73.3 %	-75.5 %	-38.4 %	-22.9 %	-12.5 %
EBIT adj.	-4.9	-10.2	-8.0	-8.1	-5.4	-4.1	-2.7
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
EBT	-5.3	14.0	-9.3	-7.7	-5.3	-4.0	-2.6
Margin	-19.1 %	95.6 %	-85.3 %	-71.0 %	-37.6 %	-22.3 %	-12.1 %
Total taxes	0.0	-0.6	0.0	0.0	-0.1	-0.1	-0.1
Net income from continuing operations	-5.3	14.6	-9.3	-7.6	-5.2	-3.9	-2.5
Income from discontinued operations (net of tax)	0.0	-0.1	0.3	-0.2	0.0	0.0	0.0
Net income before minorities	-5.3	14.6	-8.9	-7.8	-5.2	-3.9	-2.5
Minority interest	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net income	-5.3	14.6	-8.9	-7.8	-5.2	-3.9	-2.5
Margin	-19.1 %	99.2 %	-82.0 %	-72.5 %	-36.9 %	-21.8 %	-11.6 %
Number of shares, average	30.7	30.8	28.6	28.7	30.7	32.1	32.1
EPS	-0.17	0.47	-0.31	-0.27	-0.17	-0.12	-0.08
EPS adj.	-0.17	-0.30	-0.31	-0.27	-0.17	-0.12	-0.08

*Adjustments made for:

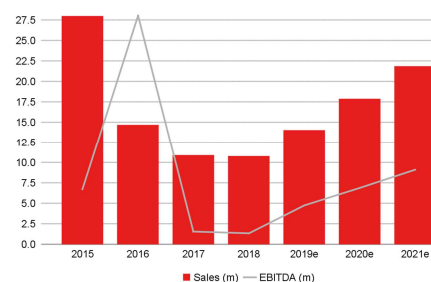
Guidance: Sales EUR 13.0-15.0m, EBITDA EUR -4.4 to -2.8m

Financial Ratios

	2015	2016	2017	2018	2019e	2020e	2021e
Total Operating Costs / Sales	127.9 %	9.2 %	164.0 %	176.8 %	133.4 %	115.9 %	107.5 %
Operating Leverage	-922.7 x	n.a.	n.a.	-1.7 x	-1.1 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 %	1.9 %	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	96,854	123,283	150,730

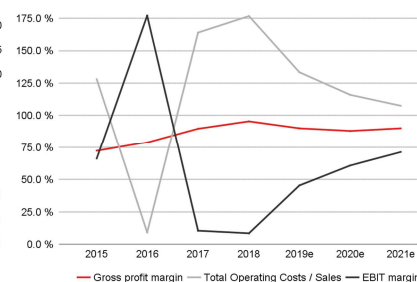
Sales, EBITDA

in EUR m

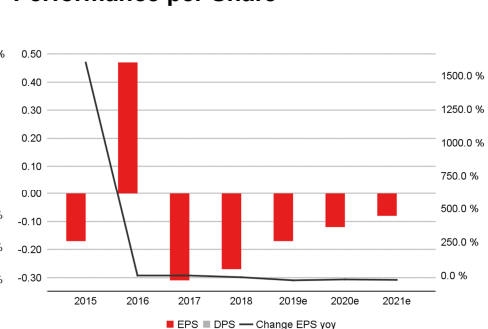


Operating Performance

in %



Performance per Share



Source: Warburg Research

Source: Warburg Research

Source: Warburg Research

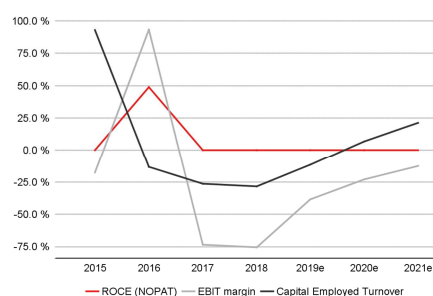
Consolidated balance sheet

In EUR m	2015	2016	2017	2018	2019e	2020e	2021e
Assets							
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	6.5	5.8	4.8
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
Fixed assets	18.3	20.8	20.3	20.9	20.3	19.6	18.6
Inventories	9.7	11.1	9.6	9.6	10.8	11.9	14.6
Accounts receivable	5.5	2.9	2.5	2.7	2.8	3.6	4.4
Liquid assets	19.6	23.8	13.3	4.3	3.7	3.6	0.4
Other short-term assets	1.8	5.3	4.7	4.8	4.8	4.8	4.8
Current assets	36.6	43.1	30.2	21.3	22.1	23.9	24.1
Total Assets	54.9	63.9	50.5	42.2	42.4	43.5	42.7
Liabilities and shareholders' equity							
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	6.7	2.8	0.3
Other equity components	-8.9	-8.7	-18.0	-25.7	-26.2	-26.3	-26.2
Shareholders' equity	40.3	54.8	42.6	34.9	32.7	28.7	26.3
Minority interest	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total equity	40.3	54.8	42.6	34.9	32.7	28.7	26.3
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	7.2
thereof short-term financial liabilities	3.3	1.3	0.3	0.0	0.0	4.3	5.2
Accounts payable	4.1	2.5	1.8	2.1	2.8	3.6	4.4
Other liabilities	5.6	3.8	4.3	4.5	4.5	4.5	4.5
Liabilities	14.6	9.1	7.9	7.3	9.6	14.7	16.4
Total liabilities and shareholders' equity	54.9	63.9	50.5	42.2	42.4	43.5	42.7

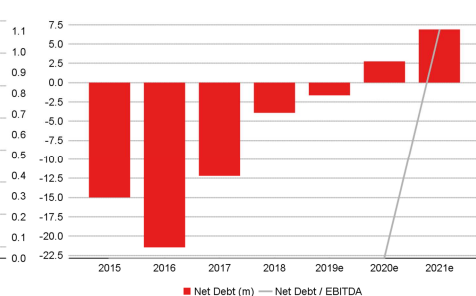
Financial Ratios

	2015	2016	2017	2018	2019e	2020e	2021e
Efficiency of Capital Employment							
Operating Assets Turnover	1.5 x	0.8 x	0.6 x	0.6 x	0.8 x	1.0 x	1.1 x
Capital Employed Turnover	1.1 x	0.4 x	0.4 x	0.3 x	0.5 x	0.6 x	0.7 x
ROA	-29.2 %	70.2 %	-44.0 %	-37.4 %	-25.6 %	-19.9 %	-13.7 %
Return on Capital							
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 %	-15.3 %	-12.7 %	-9.2 %
Adj. ROE	-12.5 %	-19.6 %	-18.4 %	-20.2 %	-15.3 %	-12.7 %	-9.2 %
Balance sheet quality							
Net Debt	-15.0	-21.5	-12.2	-3.9	-1.6	2.8	6.9
Net Financial Debt	-15.0	-21.5	-12.2	-3.9	-1.6	2.8	6.9
Net Gearing	-37.2 %	-39.2 %	-28.7 %	-11.2 %	-5.0 %	9.6 %	26.2 %
Net Fin. Debt / EBITDA	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	6714.5 %
Book Value / Share	1.3	1.8	1.5	1.2	1.0	0.9	0.8
Book value per share ex intangibles	1.0	1.4	1.1	0.8	0.6	0.5	0.4

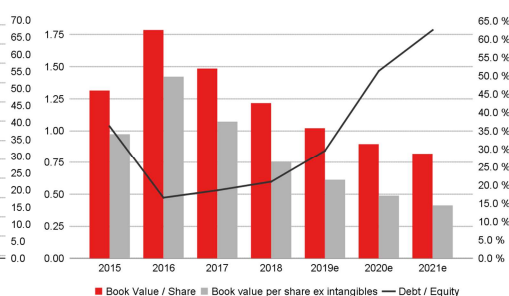
ROCE Development



Net debt in EUR m



Book Value per Share in EUR



Source: Warburg Research

Source: Warburg Research

Source: Warburg Research

Consolidated cash flow statement

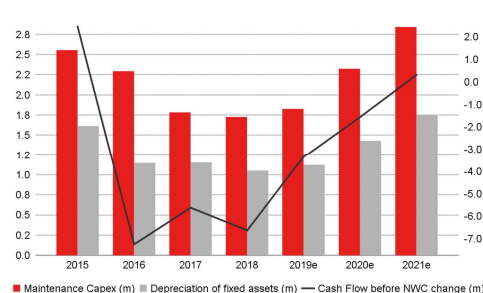
In EUR m	2015	2016	2017	2018	2019e	2020e	2021e
Net income	-5.3	14.6	-9.3	-7.6	-5.2	-3.9	-2.5
Depreciation of fixed assets	1.6	1.1	1.2	1.1	1.1	1.4	1.7
Amortisation of goodwill	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Amortisation of intangible assets	0.9	1.1	0.6	0.7	0.7	0.9	1.1
Increase/decrease in long-term provisions	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
Cash Flow before NWC change	2.5	-7.2	-5.6	-6.6	-3.4	-1.6	0.3
Increase / decrease in inventory	0.0	0.1	0.1	0.6	-1.2	-1.1	-2.7
Increase / decrease in accounts receivable	0.0	0.0	0.0	0.0	-0.1	-0.8	-0.8
Increase / decrease in accounts payable	0.0	0.0	0.0	0.0	0.7	0.8	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	-0.7	-1.1	-2.7
Net cash provided by operating activities [1]	2.5	-7.2	-5.4	-5.9	-4.0	-2.7	-2.4
Investments in intangible assets	0.0	-1.0	-1.3	-2.2	-1.0	-1.0	-1.0
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
Net cash provided by investing activities [2]	-3.1	29.8	-1.5	-3.0	-1.7	-1.7	-1.7
Change in financial liabilities	-1.1	-2.3	-1.4	-0.8	1.7	4.3	0.9
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
Net cash provided by financing activities [3]	-1.9	-4.6	-3.5	-0.2	5.2	4.3	0.9
Change in liquid funds [1]+[2]+[3]	-2.5	18.1	-10.5	-9.0	-0.6	-0.1	-3.2
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	3.7	3.6	0.4

Financial Ratios

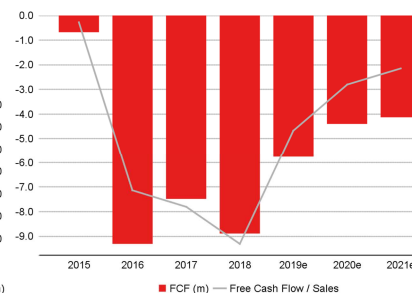
	2015	2016	2017	2018	2019e	2020e	2021e
Cash Flow							
FCF	-0.7	-9.3	-7.5	-8.9	-5.8	-4.4	-4.1
Free Cash Flow / Sales	-2.4 %	-62.7 %	-68.6 %	-81.7 %	-41.0 %	-24.6 %	-18.9 %
Free Cash Flow Potential	-4.4	14.3	-7.6	-8.3	-5.3	-4.0	-2.6
Free Cash Flow / Net Profit	12.7 %	-63.1 %	83.6 %	112.8 %	111.1 %	113.1 %	162.7 %
Interest Received / Avg. Cash	0.0 %	0.1 %	0.0 %	0.0 %	7.5 %	8.2 %	15.2 %
Interest Paid / Avg. Debt	0.8 %	0.6 %	2.8 %	4.2 %	16.7 %	4.8 %	2.9 %
Management of Funds							
Investment ratio	11.2 %	13.6 %	18.8 %	26.9 %	12.3 %	9.7 %	7.9 %
Maint. Capex / Sales	9.1 %	15.6 %	16.4 %	16.0 %	13.0 %	13.0 %	13.0 %
Capex / Dep	103.9 %	87.2 %	114.8 %	167.7 %	94.9 %	74.5 %	61.0 %
Avg. Working Capital / Sales	48.0 %	76.8 %	100.2 %	95.3 %	74.5 %	63.5 %	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	0.2 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	404	408	408
Cash conversion cycle (Days)	221	614	1,619	1,255	1,228	1,015	1,020

CAPEX and Cash Flow

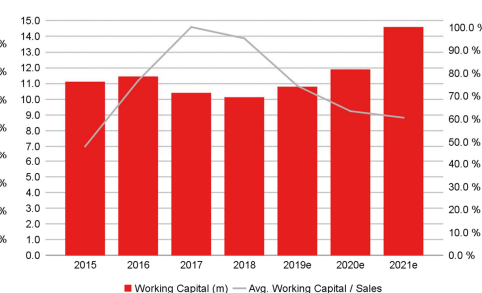
in EUR m



Free Cash Flow Generation



Working Capital



Source: Warburg Research

Source: Warburg Research

Source: Warburg Research

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Company	Disclosure	Link to the historical price targets and rating changes (last 12 months)
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-B-	Buy:	The price of the analysed financial instrument is expected to rise over the next 12 months.
-H-	Hold:	The price of the analysed financial instrument is expected to remain mostly flat over the next 12 months.
-S-	Sell:	The price of the analysed financial instrument is expected to fall over the next 12 months.
“-“	Rating suspended:	The available information currently does not permit an evaluation of the company.

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Rating	Number of stocks	% of Universe
Buy	121	61
Hold	66	34
Sell	3	2
Rating suspended	7	4
Total	197	100

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	31	82
Hold	5	13
Sell	0	0
Rating suspended	2	5
Total	38	100

PRICE AND RATING HISTORY AAP IMPLANTATE AS OF 20.05.2019



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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