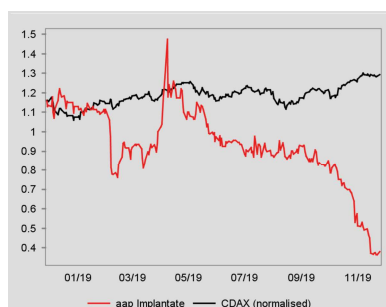


| | | | |
|---|---|--|--|
| Buy EUR 2.00 Price EUR 0.38 Upside 426.3 % | Value Indicators: EUR DCF: 2.04 | Share data: Bloomberg: AAQ GR Reuters: AAQG.DE ISIN: DE0005066609 | Description: Producer of implants to mend broken bones |
| | Market Snapshot: EUR m Market cap: 12.2 No. of shares (m): 32.1 EV: 11.0 Freefloat MC: 6.2 Ø Trad. Vol. (30d): 47.28 th | Shareholders: Freefloat 50.8 % <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> 2.9 % | Risk Profile (WRe): 2019e Beta: 1.6 Price / Book: 0.4 x Equity Ratio: 76 % |

Additional funding secured for human clinical study

Even more important that the recently reported Q3 results, which show an ongoing stabilisation of the underlying business, is the granting of state subsidies for the performance of the human clinical study for the silver coating technology.

- Additional funding secured for human clinical study - an important financial milestone:** aap announced on November 19 that it had secured additional funding from the German Federal Ministry of Education and Research (BMBF). The company is eligible for grants of up to around EUR 2.7m for expenses incurred for the human clinical study for its silver coating technology. The state funding is a very important milestone and will cover an important part of the costs of the study. In an initial reaction, the share price increased more than 20%. To put the subsidies into context, aap raised approx. EUR 3.5m in gross proceeds during the capital increase in mid-April.
- Silver coating technology update:** The planned human clinical study has not yet started and is required before aap can file for approval for the antibacterial silver coating technology. The approvals of the federal-based ethics commissions, which are necessary to start the study, are still outstanding. Nevertheless, the company has started educating participating doctors and is securing the necessary equipment. On August 8, the German Federal Institute for Drugs and Medical Devices (BfArM) already granted aap approval to conduct a human clinical study for its silver coating technology. aap also submitted an application to the FDA for approval for a human clinical study in the US in August. There is ongoing discussion with potential partners, interested in joint product development and/or in licensing deals covering specific application areas for the innovative antibacterial silver coating technology, the company said.
- No surprise in Q3 results; business improving in North America in Q4:** Q3 sales were down 1% to EUR 2.7m, bringing sales growth after 9M to +6% (EUR 8.7m). Recurring EBITDA after 9M improved to minus EUR 3.6m from minus EUR 3.9m. Assuming a stronger Q4 than Q3, aap will be on track to deliver on its confirmed FY guidance. In terms of regional performance Germany remained strong in Q3 growing by +4% (9M: +5%) despite the traditionally weaker summer season. But sales in North America suffered from the loss of a distribution partner (-3%), bringing the growth rate after 9M to a mere +1%. However, the outlook seems to have improved as aap reported that surgeries using its trauma products have been doubling on a weekly basis since the end of September yoy. aap has intensified its efforts in this important region by offering education to surgeons and is experiencing increasing interest from national group purchasing organisations with which it is currently in discussions. Following recent FDA approval, the LOQTEQ trauma system will be expanded to include the innovative poly-axial Variable Angle (VA) foot and calcaneus system. The race for success in the important North American market (9M 2019: ~16% of group sales) is still open, but time is not on aap's side as it still needs to scale up sales and leverage its existing cost structure. As a consequence, aap is still loss-making on an operating level, even adjusted for special items like personnel measures (management change). Total cash need including special effects in 9M was EUR 5.8m. Cash holdings amounted to EUR 4.4m at the end of September.
- Buy rating reiterated:** Assuming the continued 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 for the antibacterial silver technology, we derive a DCF-based fair value of EUR 2.00. Buy rating is reiterated.



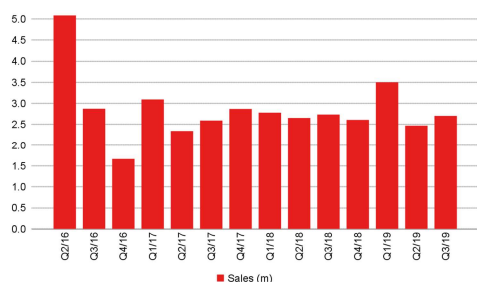
Rel. Performance vs CDAX:

| | |
|---------------------|---------|
| 1 month: | -46.9 % |
| 6 months: | -70.9 % |
| Year to date: | -86.6 % |
| Trailing 12 months: | -76.8 % |

Company events:

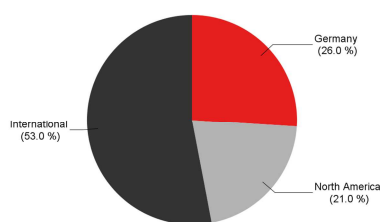
| FY End: 31.12. in EUR m | CAGR (18-21e) | 2015 | 2016 | 2017 | 2018 | 2019e | 2020e | 2021e |
|----------------------------|------------------|--|---------|---------|---------|---------|---------|---------|
| Sales | 26.6 % | 28.0 | 14.7 | 10.9 | 10.8 | 11.0 | 17.9 | 21.9 |
| Change Sales yoy | | -11.4 % | -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 % | -50.8 % | -47.6 % | -25.7 % |
| EV / Sales | | 1.9 x | 1.3 x | 2.7 x | 4.2 x | 1.0 x | 0.9 x | 0.9 x |
| EV / EBITDA | | n.a. | 1.2 x | n.a. | n.a. | n.a. | n.a. | 194.1 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 % | -83.5 % | -23.8 % | -13.3 % |
| 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 | | | | | | |

Sales development
in EUR m



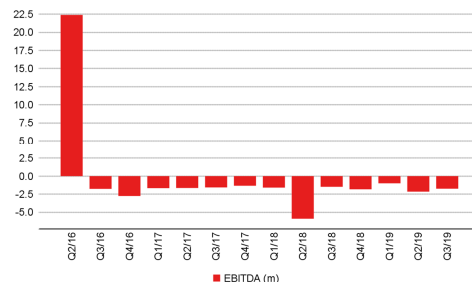
Source: Warburg Research

Sales by regions
2018; in %



Source: Warburg Research

EBITDA development
in EUR m



Source: Warburg Research

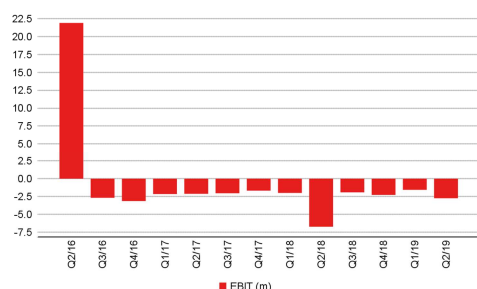
Company Background

- 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

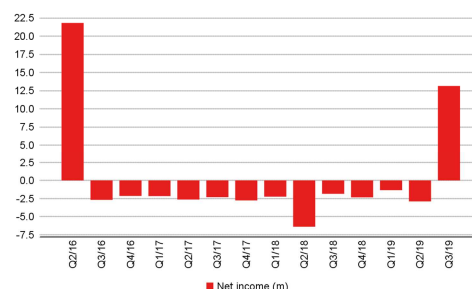
- aap Implantate AG has developed a patent protected anatomical plating system (LOQTEQ), which provides significant improvements for surgeons, hospitals and clinics as well as patients.
- Additionally aap has a promising development pipeline with an antibacterial silver coating for the implants as well 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 | -6.2 | -5.3 | -2.7 | 1.5 | 4.0 | 3.3 | 3.4 | 3.4 | 3.4 | 3.3 | 3.3 | 3.0 | 2.7 | |
| 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 % |

Derivation of Beta:

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

WACC **9.77 %**
Beta **1.60**

Valuation (m)

Present values 2031e

17

Terminal Value

41

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
65
Value per share (EUR)
2.04

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 % | 1.62 | 1.65 | 1.68 | 1.71 | 1.74 | 1.77 | 1.81 | 1.81 | 10.8 % | 1.54 | 1.60 | 1.65 | 1.71 | 1.76 | 1.82 | 1.88 |
| 1.71 | 10.3 % | 1.76 | 1.79 | 1.83 | 1.86 | 1.90 | 1.94 | 1.98 | 1.71 | 10.3 % | 1.68 | 1.74 | 1.80 | 1.86 | 1.92 | 1.98 | 2.04 |
| 1.65 | 10.0 % | 1.84 | 1.87 | 1.91 | 1.95 | 1.99 | 2.03 | 2.08 | 1.65 | 10.0 % | 1.76 | 1.82 | 1.89 | 1.95 | 2.01 | 2.07 | 2.13 |
| 1.60 | 9.8 % | 1.92 | 1.96 | 2.00 | 2.04 | 2.09 | 2.13 | 2.19 | 1.60 | 9.8 % | 1.85 | 1.91 | 1.98 | 2.04 | 2.10 | 2.17 | 2.23 |
| 1.55 | 9.5 % | 2.01 | 2.05 | 2.09 | 2.14 | 2.19 | 2.24 | 2.30 | 1.55 | 9.5 % | 1.94 | 2.01 | 2.07 | 2.14 | 2.21 | 2.27 | 2.34 |
| 1.49 | 9.3 % | 2.10 | 2.15 | 2.19 | 2.25 | 2.30 | 2.36 | 2.43 | 1.49 | 9.3 % | 2.04 | 2.11 | 2.18 | 2.25 | 2.32 | 2.38 | 2.45 |
| 1.39 | 8.8 % | 2.31 | 2.36 | 2.42 | 2.49 | 2.55 | 2.63 | 2.71 | 1.39 | 8.8 % | 2.26 | 2.33 | 2.41 | 2.49 | 2.56 | 2.64 | 2.71 |

- 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 | Price | EV / Sales | EV / EBITDA | | EV / EBIT | | P / E | | EPS CAGR |
| Prices in local currency | | 19e | 19e | 20e | 19e | 20e | 19e | 20e | (18-21e) |
| Amplitude Surgical | 1.49 | 1.6 | 6.9 | 6.3 | 36.0 | 23.3 | - | - | - |
| Globus Medical | 56.33 | 6.6 | 20.0 | 17.3 | 26.4 | 22.8 | 32.0 | 28.8 | 8.3 % |
| Wright Medical | 29.52 | 5.1 | 30.3 | 23.6 | 165.5 | 76.5 | 171.4 | 67.3 | - |
| Average | | 4.5 | 19.1 | 15.7 | 76.0 | 40.9 | 101.7 | 48.0 | 8.3 % |
| Median | | 5.1 | 20.0 | 17.3 | 36.0 | 23.3 | 101.7 | 48.0 | 8.3 % |
| aap Implantate | 0.38 | 1.0 | - | - | - | - | - | - | - |
| Delta to median | | -80.5 % | - | - | - | - | - | - | - |

- 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 | 0.4 x | 0.5 x | 0.5 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 | 1.0 x | 0.9 x | 0.9 x |
| EV / EBITDA | n.a. | 1.2 x | n.a. | n.a. | n.a. | n.a. | 194.1 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 % | -83.5 % | -23.8 % | -13.3 % |

*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 | 11.0 | 17.9 | 21.9 |
| 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 |
| Total Sales | 33.9 | 17.4 | 11.7 | 12.6 | 12.8 | 18.9 | 23.6 |
| Material expenses | 13.7 | 5.7 | 1.9 | 2.3 | 2.6 | 3.2 | 3.9 |
| Gross profit | 20.2 | 11.6 | 9.8 | 10.3 | 10.1 | 15.7 | 19.7 |
| Gross profit margin | 72.2 % | 79.1 % | 89.9 % | 95.5 % | 92.4 % | 88.0 % | 90.0 % |
| 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 |
| 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 % |
| Depreciation of fixed assets | 1.6 | 1.1 | 1.2 | 1.1 | 2.3 | 1.4 | 1.7 |
| EBITA | -3.5 | 14.9 | -7.4 | -7.5 | -8.3 | -3.2 | -1.6 |
| 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 |
| 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 % |
| EBIT adj. | -4.9 | -10.2 | -8.0 | -8.1 | -8.8 | -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 | -8.7 | -4.0 | -2.6 |
| Margin | -19.1 % | 95.6 % | -85.3 % | -71.0 % | -79.7 % | -22.3 % | -12.1 % |
| Total taxes | 0.0 | -0.6 | 0.0 | 0.0 | 0.3 | -0.1 | -0.1 |
| Net income from continuing operations | -5.3 | 14.6 | -9.3 | -7.6 | -9.1 | -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 | -9.1 | -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 | -9.1 | -3.9 | -2.5 |
| Margin | -19.1 % | 99.2 % | -82.0 % | -72.5 % | -82.6 % | -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 | -0.30 | -0.12 | -0.08 |
| EPS adj. | -0.17 | -0.30 | -0.31 | -0.27 | -0.30 | -0.12 | -0.08 |

*Adjustments made for:

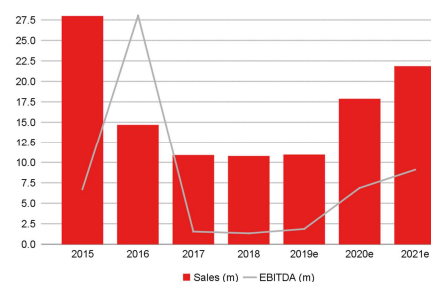
Guidance: Sales EUR 11.0-13.0m, EBITDA EUR -6.0 to -5.0m

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 |

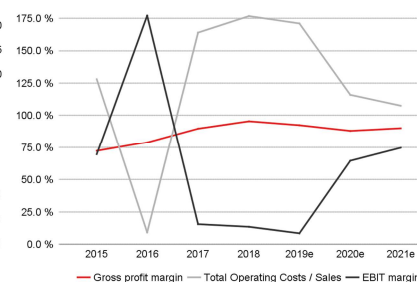
Sales, EBITDA

in EUR m

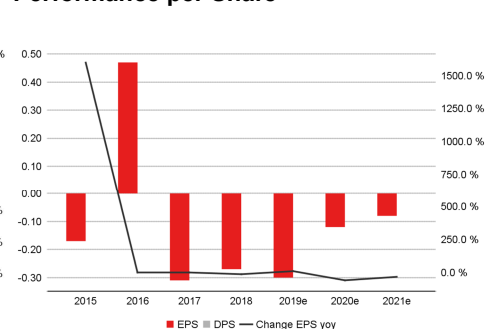


Operating Performance

in %



Performance per Share



Source: Warburg Research

Source: Warburg Research

Source: Warburg Research

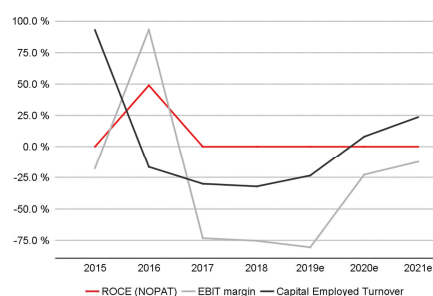
Consolidated balance sheet

| In EUR m | 2015 | 2016 | 2017 | 2018 | 2019e | 2020e | 2021e |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 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 | 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 |
| Fixed assets | 18.3 | 20.8 | 20.3 | 20.9 | 19.1 | 18.4 | 17.4 |
| 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 |
| Current assets | 36.6 | 43.1 | 30.2 | 21.3 | 18.6 | 22.0 | 24.1 |
| Total Assets | 54.9 | 63.9 | 50.5 | 42.2 | 37.7 | 40.4 | 41.5 |
| 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 | 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 |
| Total equity | 40.3 | 54.8 | 42.6 | 34.9 | 28.7 | 25.7 | 24.2 |
| 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 |
| Liabilities | 14.6 | 9.1 | 7.9 | 7.3 | 9.0 | 14.7 | 17.2 |
| Total liabilities and shareholders' equity | 54.9 | 63.9 | 50.5 | 42.2 | 37.7 | 40.4 | 41.5 |

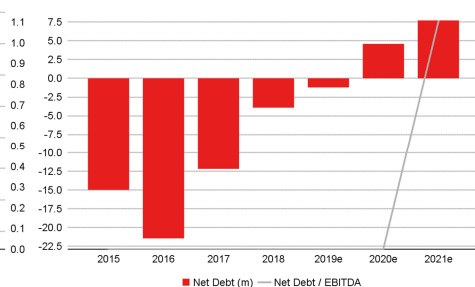
Financial Ratios

| | 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 | 1.1 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 % |
| 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 % | -28.5 % | -14.3 % | -10.2 % |
| Adj. ROE | -12.5 % | -19.6 % | -18.4 % | -20.2 % | -28.5 % | -14.3 % | -10.2 % |
| Balance sheet quality | | | | | | | |
| 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 |

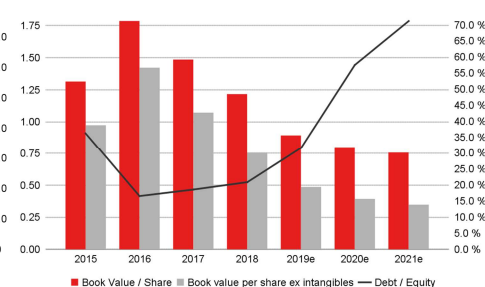
ROCE Development



Net debt in EUR m



Book Value per Share in EUR



Source: Warburg Research

Source: Warburg Research

Source: Warburg Research

Consolidated cash flow statement

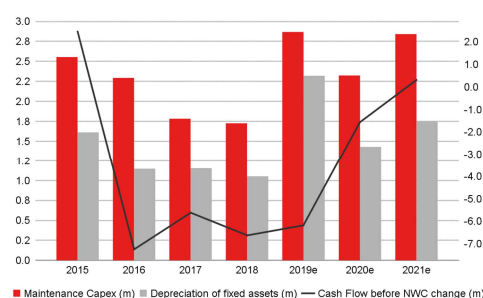
| In EUR m | 2015 | 2016 | 2017 | 2018 | 2019e | 2020e | 2021e |
|--|-------------|-------------|--------------|-------------|-------------|-------------|-------------|
| Net income | -5.3 | 14.6 | -9.3 | -7.6 | -9.1 | -3.9 | -2.5 |
| Depreciation of fixed assets | 1.6 | 1.1 | 1.2 | 1.1 | 2.3 | 1.4 | 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 |
| Cash Flow before NWC change | 2.5 | -7.2 | -5.6 | -6.6 | -6.2 | -1.6 | 0.3 |
| 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 |
| Net cash provided by operating activities [1] | 2.5 | -7.2 | -5.4 | -5.9 | -4.5 | -5.1 | -2.4 |
| 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 |
| Net cash provided by investing activities [2] | -3.1 | 29.8 | -1.5 | -3.0 | -1.7 | -0.7 | -0.7 |
| 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 |
| Net cash provided by financing activities [3] | -1.9 | -4.6 | -3.5 | -0.2 | 5.2 | 4.3 | 1.7 |
| Change in liquid funds [1]+[2]+[3] | -2.5 | 18.1 | -10.5 | -9.0 | -1.0 | -1.5 | -1.4 |
| 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

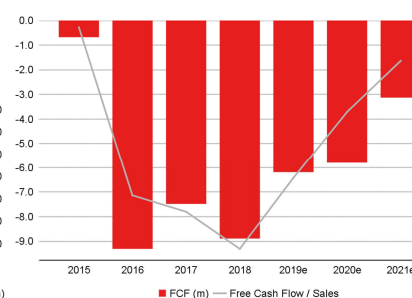
| | 2015 | 2016 | 2017 | 2018 | 2019e | 2020e | 2021e |
|--------------------------------------|---------|---------|---------|---------|---------|---------|---------|
| Cash Flow | | | | | | | |
| FCF | -0.7 | -9.3 | -7.5 | -8.9 | -6.2 | -5.8 | -3.1 |
| Free Cash Flow / Sales | -2.4 % | -62.7 % | -68.6 % | -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 % |
| Management of Funds | | | | | | | |
| 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

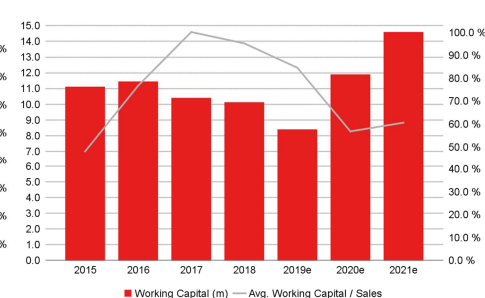
in EUR m



Free Cash Flow Generation



Working Capital



Source: Warburg Research

Source: Warburg Research

Source: Warburg Research

LEGAL DISCLAIMER

This research report ("investment recommendation") was prepared by the Warburg Research GmbH, a fully owned subsidiary of the M.M.Warburg & CO (AG & Co.) KGaA and is passed on by the M.M.Warburg & CO (AG & Co.) KGaA. It is intended solely for the recipient and may not be passed on to another company without their prior consent, regardless of whether the company is part of the same corporation or not. It contains selected information and does not purport to be complete. The investment recommendation is based on publicly available information and data ("information") believed to be accurate and complete. Warburg Research GmbH neither examines the information for accuracy and completeness, nor guarantees its accuracy and completeness. Possible errors or incompleteness of the information do not constitute grounds for liability of M.M.Warburg & CO (AG & Co.) KGaA or Warburg Research GmbH for damages of any kind whatsoever, and M.M.Warburg & CO (AG & Co.) KGaA and Warburg Research GmbH are not liable for indirect and/or direct and/or consequential damages. In particular, neither M.M.Warburg & CO (AG & Co.) KGaA nor Warburg Research GmbH are liable for the statements, plans or other details contained in these investment recommendations concerning the examined companies, their affiliated companies, strategies, economic situations, market and competitive situations, regulatory environment, etc. Although due care has been taken in compiling this investment recommendation, it cannot be excluded that it is incomplete or contains errors. M.M.Warburg & CO (AG & Co.) KGaA and Warburg Research GmbH, their shareholders and employees are not liable for the accuracy and completeness of the statements, estimations and the conclusions derived from the information contained in this investment recommendation. Provided a investment recommendation is being transmitted in connection with an existing contractual relationship, i.e. financial advisory or similar services, the liability of M.M.Warburg & CO (AG & Co.) KGaA and Warburg Research GmbH shall be restricted to gross negligence and wilful misconduct. In case of failure in essential tasks, M.M.Warburg & CO (AG & Co.) KGaA and Warburg Research GmbH are liable for normal negligence. In any case, the liability of M.M.Warburg & CO (AG & Co.) KGaA and Warburg Research GmbH is limited to typical, expectable damages. This investment recommendation does not constitute an offer or a solicitation of an offer for the purchase or sale of any security. Partners, directors or employees of M.M.Warburg & CO (AG & Co.) KGaA, Warburg Research GmbH or affiliated companies may serve in a position of responsibility, i.e. on the board of directors of companies mentioned in the report. Opinions expressed in this investment recommendation are subject to change without notice. All rights reserved.

COPYRIGHT NOTICE

This work including all its parts is protected by copyright. Any use beyond the limits provided by copyright law without permission is prohibited and punishable. This applies, in particular, to reproductions, translations, microfilming, and storage and processing on electronic media of the entire content or parts thereof.

DISCLOSURE ACCORDING TO §85 OF THE GERMAN SECURITIES TRADING ACT (WPHG), MAR AND MIFID II INCL. COMMISSION DELEGATED REGULATION (EU) 2016/958 AND (EU) 2017/565

The valuation underlying the investment recommendation for the company analysed here is based on generally accepted and widely used methods of fundamental analysis, such as e.g. DCF Model, Free Cash Flow Value Potential, NAV, Peer Group Comparison or Sum of the Parts Model (see also <http://www.mmwarburg.de/disclaimer/disclaimer.htm#Valuation>). The result of this fundamental valuation is modified to take into consideration the analyst's assessment as regards the expected development of investor sentiment and its impact on the share price.

Independent of the applied valuation methods, there is the risk that the price target will not be met, for instance because of unforeseen changes in demand for the company's products, changes in management, technology, economic development, interest rate development, operating and/or material costs, competitive pressure, supervisory law, exchange rate, tax rate etc. For investments in foreign markets and instruments there are further risks, generally based on exchange rate changes or changes in political and social conditions.

This commentary reflects the opinion of the relevant author at the point in time of its compilation. A change in the fundamental factors underlying the valuation can mean that the valuation is subsequently no longer accurate. Whether, or in what time frame, an update of this commentary follows is not determined in advance.

Additional internal and organisational arrangements to prevent or to deal with conflicts of interest have been implemented. Among these are the spatial separation of Warburg Research GmbH from M.M.Warburg & CO (AG & Co.) KGaA and the creation of areas of confidentiality. This prevents the exchange of information, which could form the basis of conflicts of interest for Warburg Research GmbH in terms of the analysed issuers or their financial instruments.

The analysts of Warburg Research GmbH do not receive a gratuity – directly or indirectly – from the investment banking activities of M.M.Warburg & CO (AG & Co.) KGaA or of any company within the Warburg-Group.

All prices of financial instruments given in this investment recommendation are the closing prices on the last stock-market trading day before the publication date stated, unless another point in time is explicitly stated.

M.M.Warburg & CO (AG & Co.) KGaA and Warburg Research GmbH are subject to the supervision of the Federal Financial Supervisory Authority, BaFin. M.M.Warburg & CO (AG & Co.) KGaA is additionally subject to the supervision of the European Central Bank (ECB).

SOURCES

All data and consensus estimates have been obtained from FactSet except where stated otherwise.

Additional information for clients in the United States

1. This research report (the "Report") is a product of Warburg Research GmbH, Germany, a fully owned subsidiary of M.M.Warburg & CO (AG & Co.) KGaA, Germany (in the following collectively "Warburg"). Warburg is the employer of the research analyst(s), who have prepared the Report. The research analyst(s) reside outside the United States and are not associated persons of any U.S. regulated broker-dealer and therefore are not subject to the supervision of any U.S. regulated broker-dealer.
2. The Report is provided in the United States for distribution solely to "major U.S. institutional investors" under Rule 15a-6 of the U.S. Securities Exchange Act of 1934.
3. Any recipient of the Report should effect transactions in the securities discussed in the Report only through J.P.P. Euro-Securities, Inc., Delaware.
4. J.P.P. Euro-Securities, Inc. does not accept or receive any compensation of any kind for the dissemination of the research reports from Warburg.

Reference in accordance with section 85 of the German Securities Trading Act (WpHG) and Art. 20 MAR regarding possible conflicts of interest with companies analysed:

- 1- Warburg Research, or an affiliated company, or an employee of one of these companies responsible for the compilation of the research, hold a **share of more than 5%** of the equity capital of the analysed company.
- 2- Warburg Research, or an affiliated company, within the last twelve months participated in the **management of a consortium** for an issue in the course of a public offering of such financial instruments, which are, or the issuer of which is, the subject of the investment recommendation.
- 3- Companies affiliated with Warburg Research **manage financial instruments**, which are, or the issuers of which are, subject of the investment recommendation, in a market based on the provision of buy or sell contracts.
- 4- MMWB, Warburg Research, or an affiliated company, reached an agreement with the issuer to provide **investment banking and/or investment services** and the relevant agreement was in force in the last 12 months or there arose for this period, based on the relevant agreement, the obligation to provide or to receive a service or compensation - provided that this disclosure does not result in the disclosure of confidential business information.
- 5- The company compiling the analysis or an affiliated company had reached an **agreement on the compilation of the investment recommendation** with the analysed company.
- 6- Companies affiliated with Warburg Research **regularly trade** financial instruments of the analysed company or derivatives of these.
- 6a- Warburg Research, or an affiliated company, holds a **net long position of more than 0.5%** of the total issued share capital of the analysed company.
- 6b- Warburg Research, or an affiliated company, holds a **net short position of more than 0.5%** of the total issued share capital of the analysed company.
- 6c- The issuer holds shares of more than 5% of the total issued capital of Warburg Research or an affiliated company.
- 7- The company preparing the analysis as well as its affiliated companies and employees have **other important interests** in relation to the analysed company, such as, for example, the exercising of mandates at analysed companies.

This report has been made accessible to the company analysed.

| Company | Disclosure | Link to the historical price targets and rating changes (last 12 months) |
|----------------|------------|---|
| aap Implantate | 4, 5 | http://www.mmwarburg.com/disclaimer/disclaimer_en/DE0005066609.htm |

INVESTMENT RECOMMENDATION

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- | 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. |

WARBURG RESEARCH GMBH – ANALYSED RESEARCH UNIVERSE BY RATING

| Rating | Number of stocks | % of Universe |
|------------------|------------------|---------------|
| Buy | 119 | 59 |
| Hold | 73 | 36 |
| Sell | 6 | 3 |
| Rating suspended | 4 | 2 |
| Total | 202 | 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 | 33 | 77 |
| Hold | 8 | 19 |
| Sell | 0 | 0 |
| Rating suspended | 2 | 5 |
| Total | 43 | 100 |

PRICE AND RATING HISTORY AAP IMPLANTATE AS OF 26.11.2019



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.

EQUITIES

Matthias Rode +49 40 3282-2678
Head of Equities mrode@mmwarburg.com

RESEARCH

Michael Heider +49 40 309537-280
Head of Research mheider@warburg-research.com

Henner Rüschemeyer +49 40 309537-270
Head of Research hrueschmeier@warburg-research.com

Jan Bauer +49 40 309537-155
Renewables jbauer@warburg-research.com

Jonas Blum +49 40 309537-240
Telco, Construction jblum@warburg-research.com

Christian Cohrs +49 40 309537-175
Industrials & Transportation ccohrs@warburg-research.com

Felix Ellmann +49 40 309537-120
Software, IT fellmann@warburg-research.com

Jörg Philipp Frey +49 40 309537-258
Retail, Consumer Goods jfrey@warburg-research.com

Marius Fuhrberg +49 40 309537-185
Financial Services mfuhrberg@warburg-research.com

Ulrich Huwald +49 40 309537-255
Health Care, Pharma uhuwald@warburg-research.com

Philipp Kaiser +49 40 309537-260
Real Estate pkaiser@warburg-research.com

Thilo Kleibauer +49 40 309537-257
Retail, Consumer Goods tkleibauer@warburg-research.com

Eggert Kuls +49 40 309537-256
Engineering ekuls@warburg-research.com

Andreas Pläsier +49 40 309537-246
Banks, Financial Services aplaesier@warburg-research.com

Franz Schall +49 40 309537-230
Automobiles, Car Suppliers fschall@warburg-research.com

Malte Schaumann +49 40 309537-170
Technology mschaumann@warburg-research.com

Patrick Schmidt +49 40 309537-125
Leisure, Internet pschmidt@warburg-research.com

Oliver Schwarz +49 40 309537-250
Chemicals, Agriculture oschwarz@warburg-research.com

Cansu Tatar +49 40 309537-248
Cap. Goods, Engineering ctatar@warburg-research.com

Marc-René Tonn +49 40 309537-259
Automobiles, Car Suppliers mtonn@warburg-research.com

Robert-Jan van der Horst +49 40 309537-290
Technology rvanderhorst@warburg-research.com

Andreas Wolf +49 40 309537-140
Software, IT awolf@warburg-research.com

INSTITUTIONAL EQUITY SALES

Marc Niemann +49 40 3282-2660
Head of Equity Sales, Germany mniemann@mmwarburg.com

Klaus Schilling +49 40 3282-2664
Head of Equity Sales, Germany kschilling@mmwarburg.com

Tim Beckmann +49 40 3282-2665
United Kingdom tbeckmann@mmwarburg.com

Lyubka Bogdanova +49 69 5050-7411
Ireland, Poland, Australia lbogdanova@mmwarburg.com

Jens Buchmüller +49 69 5050-7415
Scandinavia, Austria jbuchmueller@mmwarburg.com

Alexander Eschweiler +49 40 3282-2669
Germany aeschweiler@mmwarburg.com

Matthias Fritsch +49 40 3282-2696
United Kingdom mfritsch@mmwarburg.com

Tobias Hald +49 40 3282-2695
United Kingdom thald@mmwarburg.com

Christopher Seedorf +49 69 5050-7414
Switzerland cseedorf@mmwarburg.com

Sophie Hauer +49 69 5050-7417
Roadshow/Marketing shauer@mmwarburg.com

Juliane Niemann +49 40 3282-2694
Roadshow/Marketing jniemann@mmwarburg.com

SALES TRADING

Oliver Merckel +49 40 3282-2634
Head of Sales Trading omerckel@mmwarburg.com

Elyaz Dust +49 40 3282-2702
Sales Trading edust@mmwarburg.com

Michael Ilgenstein +49 40 3282-2700
Sales Trading milgenstein@mmwarburg.com

Bastian Quast +49 40 3282-2701
Sales Trading bquast@mmwarburg.com

Jörg Treptow +49 40 3282-2658
Sales Trading jtreptow@mmwarburg.com

Jan Walter +49 40 3282-2662
Sales Trading jwalter@mmwarburg.com

MACRO RESEARCH

Carsten Klude +49 40 3282-2572
Macro Research cklude@mmwarburg.com

Dr. Christian Jasperneite +49 40 3282-2439
Investment Strategy cjasperneite@mmwarburg.com

Our research can be found under:

Warburg Research research.mmwarburg.com/en/index.html
Bloomberg MMWA GO
FactSet www.factset.com

Thomson Reuters www.thomsonreuters.com
Capital IQ www.capitaliq.com

For access please contact:

Andrea Schaper +49 40 3282-2632
Sales Assistance aschaper@mmwarburg.com

Kerstin Muthig +49 40 3282-2703
Sales Assistance kmuthig@mmwarburg.com