DEUTZ

(SDAX, Industrial Goods & Services)

WARBURG RESEARCH

Buy	
EUR **9.60**	(EUR 7.80)
Price	EUR 7.24
Upside	**32.7 %**

Value Indicators:	EUR
DCF:	9.58
FCF-Value Potential 20e:	10.81

Share data:	
Bloomberg:	DEZ GR
Reuters:	DEZG.DE
ISIN:	DE0006305006

Description:

Independent manufacturer of diesel engines with focus on non-road applications

Market Snapshot:	EUR m
Market cap:	874
No. of shares (m):	121
EV:	979
Freefloat MC:	874
Ø Trad. Vol. (30d):	2.66 m

Shareholders:	
Freefloat	100.0 %

Risk Profile (WRe):	2017e
Beta:	1.3
Price / Book:	1.3 x
Equity Ratio:	49 %
Net Debt / EBITDA:	0.3 x

Time to revisit the margin story

Continued sector strength paves the way for further top-line growth. DEUTZ released very decent final figures for FY 2017, with revenue growth of 17.4% yoy and adj. EBIT > EUR 40m. Looking beyond 2017, demand should remain healthy in the company's end markets, which span the construction sector, material handling and agriculture. Volvo recently raised its outlook for 2018 construction equipment demand in Europe and North America to 0 to +10% (previously -5% to +5%). Pre-buy effects related to the introduction of the new emission standard EU Stage V, which becomes effective in January 2019, are likely to be an additional stimulus for 2018 engine sales while new deliveries to KION and Liebherr should contribute to DEUTZ' revenues from 2019 onwards. Considering the traditionally high correlation between the top-line development and share price of DEUTZ, we remain optimistic and see little reason for short-term concern.

Following years of unfulfilled promises, the chances for margin improvement are much better now than in the past… As early as in 2010 under the leadership of the then CEO, Dr. Helmut Leube, DEUTZ communicated a medium-term EBIT margin target of ~10%. In the following years, however, the company failed to show discernible progress. Apart from company-specific issues (e.g. quality issues in 2014 when early wear of engine parts resulted in warranty claims against DEUTZ), we see the roots of this lack of progress in an unfavourable coincidence of weakening end markets and higher R&D requirements to comply with ever-stricter emissions regulations. The overall situation has meanwhile changed for the better and we believe the chances of achieving discernable margin improvements are much better now than in the past. The sector environment is strong which fuels top-line growth and gross margin expansion while the cycle of increasingly tightening emission standards for non-road mobile machinery appears to have come to an end. This should result in structural relief on the R&D side, which moderates investment needs, and should propel margin progression.

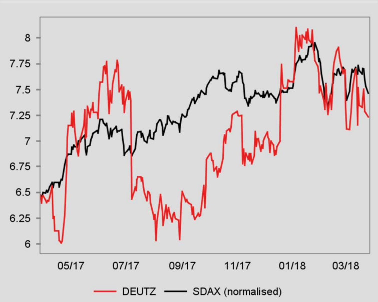
… and offer a substantial value option. The present CEO, Dr. Hiller, is aiming for substantial EBIT margin improvement to a sustainable level of 7-8% with envisaged step-ups of roughly 100bps p.a. While we still refrain from applying such margin levels to our primary valuation scenario, we recognise the significant value option. **Assuming profitability improves to the extent targeted by management and reaches a level of 7.5% by 2024, we derive a fair value of EUR 12 per share**, which offers ~60% upside at current share price levels. Considering that the DEUTZ share is currently trading at a very low level, even below our conservative scenario price target of **EUR 9.60**, and considering the significant upside potential if margins sustainably improve, the DEUTZ share offers an attractive risk-reward tradeoff. We remain buyers.

Changes in Estimates:

FY End: 31.12. in EUR m	2018e (old)	+ / -	2019e (old)	+ / -	2020e (old)	+ / -
Sales	1,603	4.0 %	1,664	6.2 %	n.a.	n.m.
EBIT adj.	69	-0.6 %	76	14.1 %	n.a.	n.m.
EPS adj.	0.43	0.0 %	0.48	14.6 %	n.a.	n.m.

Comment on Changes:

- Acquisition effects and deliveries to new customers reflected in estimates
- Price target increases on assumptions of better profitability and rolling forward of our model.



Rel. Performance vs SDAX:	
1 month:	-3.0 %
6 months:	10.0 %
Year to date:	-3.9 %
Trailing 12 months:	-2.9 %

Company events:	
26.04.18	AGM
03.05.18	Q1
02.08.18	Q2
08.11.18	Q3

FY End: 31.12. in EUR m	CAGR (17-20e)	2014	2015	2016	2017	2018e	2019e	2020e
Sales	8.1 %	1,530	1,247	1,260	1,479	1,667	1,767	1,871
Change Sales yoy		5.3 %	-18.5 %	1.0 %	17.4 %	12.7 %	6.0 %	5.9 %
Gross profit margin		*13.2 %*	*15.4 %*	*17.3 %*	*17.3 %*	*17.9 %*	*18.3 %*	*18.6 %*
EBITDA	-6.4 %	120	112	114	240	156	177	197
Margin		*7.9 %*	*9.0 %*	*9.1 %*	*16.2 %*	*9.4 %*	*10.0 %*	*10.5 %*
EBIT	-10.7 %	13	5	23	147	69	87	104
EBIT adj.	35.1 %	13	5	23	42	69	87	104
Margin		*0.8 %*	*0.4 %*	*1.9 %*	*2.9 %*	*4.1 %*	*4.9 %*	*5.6 %*
Net income		21	5	17	121	52	67	81
EPS	-12.5 %	0.18	0.04	0.14	1.00	0.43	0.55	0.67
EPS adj.	44.9 %	0.18	0.04	0.14	0.22	0.43	0.55	0.67
DPS	-22.4 %	0.07	0.07	0.07	0.15	0.07	0.07	0.07
Dividend Yield		1.3 %	1.6 %	1.7 %	2.3 %	1.0 %	1.0 %	1.0 %
FCFPS		0.43	0.29	0.04	1.27	-0.13	0.35	0.36
FCF / Market cap		7.0 %	6.0 %	0.5 %	5.2 %	-1.8 %	4.9 %	4.9 %
EV / Sales		0.6 x	0.5 x	0.5 x	0.6 x	0.6 x	0.5 x	0.5 x
EV / EBITDA		7.1 x	6.0 x	5.8 x	3.7 x	6.3 x	5.3 x	4.5 x
EV / EBIT adj.		67.1 x	137.0 x	28.1 x	20.8 x	14.3 x	10.7 x	8.5 x
P / E		30.6 x	107.1 x	29.7 x	6.6 x	16.8 x	13.2 x	10.8 x
P / E adj.		30.6 x	107.1 x	29.1 x	30.0 x	16.8 x	13.2 x	10.8 x
FCF Potential Yield		6.0 %	6.5 %	7.7 %	18.5 %	5.8 %	8.2 %	10.3 %
Net Debt		188	148	158	78	98	51	3
ROCE (NOPAT)		5.3 %	2.8 %	2.9 %	18.6 %	7.8 %	9.4 %	11.1 %
Guidance:	Clear sales increase with moderately higher EBIT margin							

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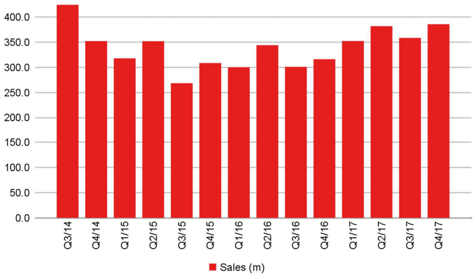
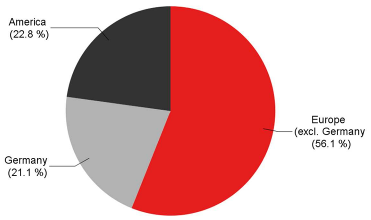
Sales development
in EUR m



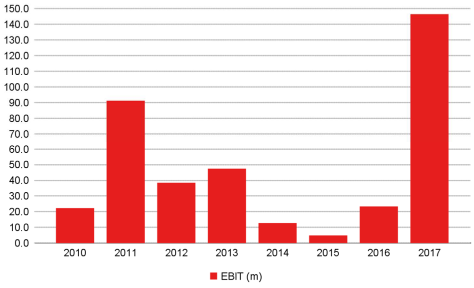
Source: Warburg Research

Sales by regions
2017; in %



Source: Warburg Research

EBIT development
in EUR m



Source: Warburg Research

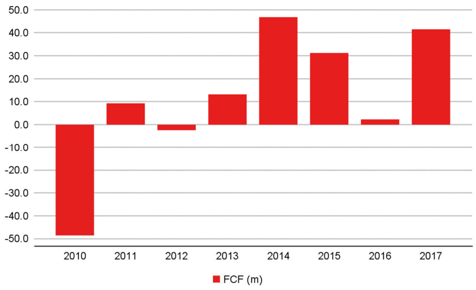
Company Background

- Deutz is an independent manufacturer of diesel engines, especially for so-called "non-road" use, such as construction and agricultural equipment, gensets, railway and special applications such as aircraft tractors
- The product range comprises air-, water-, and oil-cooled diesel engines with a power output range between 25kW and 520kW
- In the Compact Engines segment, Deutz offers standardised engines that can be adapted to customers' requirements with a modular system of customer-specific attachments
- In the Customised Solutions segment, Deutz offers entire powertrain solutions for specific applications such as railway and special mobile applications such as aircraft tractors

Competitive Quality

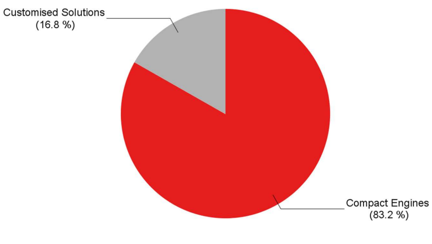
- Established reputation for diesel engines with outstanding reliability, fuel efficiency and power-to-size ratio. It holds leading market positions in the relevant markets
- The high technical complexity of diesel engines that comply with emissions regulations poses a substantial barrier to market entry for potential competitors not already active in the industry.
- Growth in customer industries is supported by megatrends such as urbanisation, which fuels construction activity, and a growing world population, which fuels demand for more efficient agricultural equipment
- Ever stricter emissions regulations call for increasingly complex engine systems, which makes in-house development very costly for smaller OEMs. This represents an opportunity for independent engine manufacturers.

Free Cash Flow development
in EUR m



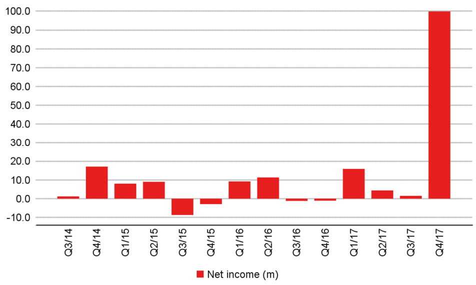
Source: Warburg Research

Sales by segments
2017; in %



Source: Warburg Research

Net income development
in EUR m



Source: Warburg Research

Summary of Investment Case

Investment triggers

- We believe that the current share price primarily reflects the good sector environment but – for good reason – still neglects the potential for sustainable margin improvement.
- A highly visible margin step-up in 2018 might focus investor attention on the margin expansion story again and spur valuation considerations
- While DEUTZ has failed to deliver on its margin targets, we believe that the chances of discernible margin improvement are much better now than they were in the past since a strong sector environment, which fuels top-line growth and gross margin expansion, is now coinciding with structural relief on the R&D side.

Valuation

- Our price target of EUR 9.60 per share reflects moderate margin expansion and assumes a peak margin that is still about 2-2.5% below the mid-point of the envisaged EBIT margin corridor of 7-8%.
- In a second DCF model, we assume the mid-point of the envisaged EBIT margin corridor will be achieved by 2024 with otherwise unchanged assumptions. In this more optimistic scenario, we derive a fair value of **EUR 12** per share, which implies upside potential of ~60% at current share price levels.
- Considering that the DEUTZ share is currently trading even below our base-case scenario price target of EUR 9.60 per share with significant upside potential if DEUTZ shows credible signs of margin expansion, we believe the DEUTZ share currently offers an attractive risk-reward tradeoff.

Growth

- We forecast a revenue CAGR of 8.1% for the period 2017-2020e.
- The top line benefits from strong demand in important end markets such as construction, agricultural and material handling equipment
- Pre-buy engine effects related to the introduction of EU Stage V (to become effective in 2019) should spur 2018 revenues
- New deliveries to KION and Liebherr should more than compensate for the negative impact of pre-buy engine effects that are likely to materialise in 2019.

Competitive quality

- Established reputation for product quality and reliability
- Early fulfillment of new emission standards to become effective in 2019/2020 (EU Stage V) provides development certainty for customers

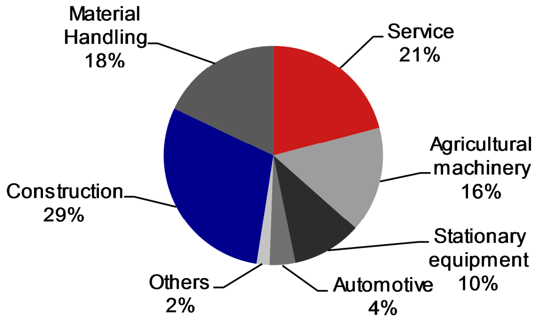
Warburg versus consensus

- We are ~5-7% ahead of consensus revenue estimates and ~5-15% ahead of consensus earnings estimates.

Company Overview

Segments	DEUTZ - Compact Engines	DEUTZ - Customised Solutions
Description	Liquid-cooled engines with displacements up to 8 litres	Air-cooled diesel engines and liquid-cooled diesel engines with displacements of more than 8 litres as well as customised powertrain solutions
Sales in EUR m	1.227,5	247,9
in % of total	*83,2%*	*16,8%*
EBIT in EUR m	22,5	24,5
EBIT Margin	*1,8%*	*9,9%*
Customers	Global base of original equipments manufacturers (OEMs) with a focus on non-road applications such as construction and agricultural equipment; major customers include Volvo, KION, Kubota	

Sales by costumer industry

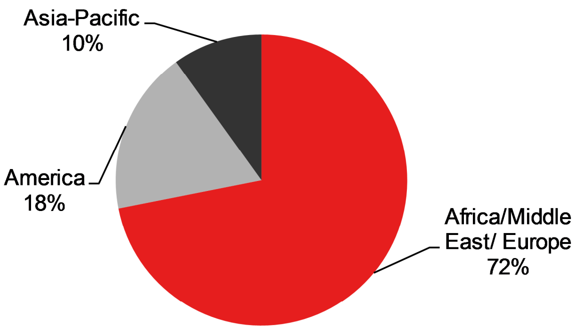


Engines for	Material handling	Agricultural machinery	Construction equipment

Market position	The company claims to have a market share of almost 20% in its relevant market in the EMEA region and of more than 10% in the NAFTA region
Competitors	Cummins, Perkins, Kubota, Isuzu, Yanmar, John Deere
Raw materials	Cast-iron scrap, aluminium, copper, platinum, palladium

Regions	Africa/Middle East/ Europe	America	Asia-Pacific
Sales in EUR m	**1.063,50**	**268,1**	**147,5**

Sales split by region



* All numbers relate to FY 2017

Source: Warburg Research

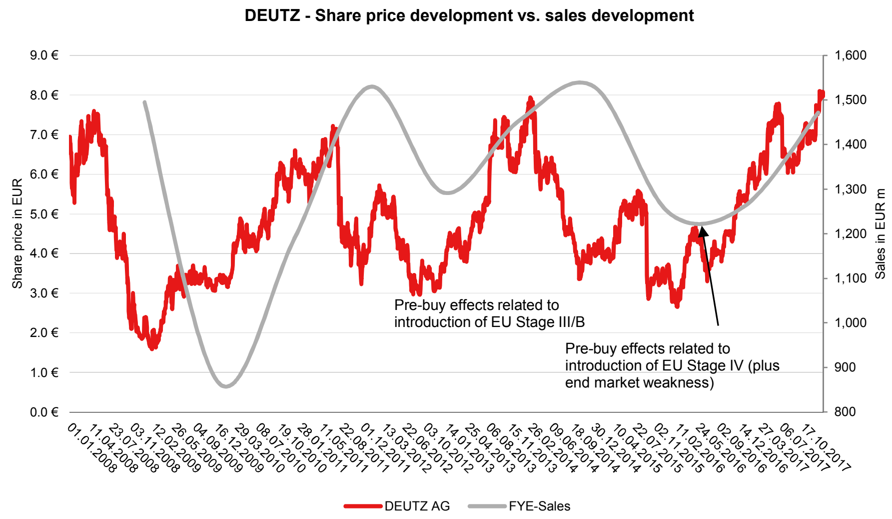
Time to revisit the margin story

- Continuation of supportive sector environment and deliveries to new customers should promote top-line growth over the coming years
- Revisiting the margin story: DEUTZ has historically failed to deliver on its communicated margin targets…
- …but a strong sector environment, which fuels top-line growth and gross margin expansion, together with structural relief on the R&D side indicate margin expansion potential

Strong sector environment fuels top-line growth

Historically, investing in the DEUTZ share was mainly an early-cycle sector play and was something of a play on top-line development. The share price has frequently mirrored the company's revenue development which in turn depends on demand in highly cyclical end markets like construction, agriculture and material handling.

Investing in DEUTZ is usually a play on revenues



Source: FactSet, Warburg Research

The recent stock price rally, which started in mid-2016, was fuelled by a global recovery in construction equipment demand, improving fundamentals in agriculture and an end to pre-buy engine effects related to the introduction of EU Stage IV in 2014. Going into 2018, revenue growth should remain strong as the economy continues to flourish and demand from construction, agricultural and material handling customers is set to remain high. Only recently AB Volvo, which is DEUTZ' most important customer accounting for ~19% of group revenues in 2016, raised its outlook for European and North American construction equipment demand.

Construction equipment demand forecast - Volvo

Total market development	Year-to-date Nov		
Change in % measured in units	2017	Forecast 2018	Previous forecast
Europe	16	0% to +10%	-5% to +5%
North America	10	0% to +10%	-5% to +5%
South America	17	0% to +10%	0% to +10%
Asia excl. China	11	0% to +10%	0% to +10%
China	74	+10% to +20%	+5% to +15%

Source: AB Volvo (Annual Report 2017)

With EU Stage V to become effective in January 2019, pre-buy engine effects ahead of its introduction are likely to be an additional stimulus to the DEUTZ top line in 2018. However, compared to prior emission regulation changes, we expect the impact to be only moderate as a) the price differential between Stage IV and Stage V engines is far lower (WRe: ~10%; difference mainly attributable to the diesel particulate filter required to achieve Stage V) than from Stage III/B to Stage IV (~30%), and b) the engine space requirements are comparable. This means that the new regulation will not trigger the costly redesign of equipment on the part of OEMs as was the case with the step from Stage III/B to Stage IV.

We estimate that ahead of EU Stage V, customers will order about 10,000 engines in advance in 2018, which might – depending on the engine price - add additional revenues of EUR 30-70m in 2018 (WRe). On the flip-side of the coin, these pre-buy effects will simply take from revenues in 2019 exerting headwind in that year.

From 2019 onwards, however, new deliveries to KION and Liebherr should contribute significantly to DEUTZ' top line and more than compensate for the headwinds from the aforementioned pre-buy engine effects. Annual deliveries to KION during the ramp-up phase will be in the range of 15,000-20,000 engines (after the ramp-up, annual deliveries are seen at ~30,000 units), which should translate into incremental revenues of EUR 50-70m p.a. (WRe: already assuming below-average prices). Engine deliveries to Liebherr should be in the range of 5,000-10,000 units. Owing to their size, these engines should clearly come at above-average prices.

All in all, DEUTZ continues to benefit from a very supportive business environment with potential for decent revenue growth over the next two years. Considering the traditionally high correlation between DEUTZ' top-line development and its share price, we remain optimistic and see little cause for concern.

Engine sales and group revenues over time

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018e	2019e	2020e
Group (excl. Torqeedo)	**863.4**	**1,189.1**	**1,529.0**	**1,291.9**	**1,453.2**	**1,530.2**	**1,247.4**	**1,260.2**	**1,475.4**	**1,637.5**	**1,735.9**	**1,837.7**
yoy change	-	37.7%	28.6%	-15.5%	12.5%	5.3%	-18.5%	1.0%	17.1%	11.0%	6.0%	5.9%
thereof Services	**175.0**	**215.8**	**241.6**	**250.3**	**253.7**	**259.3**	**278.4**	**287.3**	**309.2**	**331.7**	**343.7**	**356.1**
yoy change	-	23.3%	12.0%	3.6%	1.4%	2.2%	7.4%	3.2%	7.6%	7.3%	3.6%	3.6%
in % of total	20.3%	18.1%	15.8%	19.4%	17.5%	16.9%	22.3%	22.8%	21.0%	20.3%	19.8%	19.4%
Sales excl. Services	**688.40**	**973.30**	**1287.40**	**1041.60**	**1199.50**	**1270.90**	**969.00**	**972.90**	**1166.20**	**1305.74**	**1392.16**	**1481.58**
yoy change	-	41.4%	32.3%	-19.1%	15.2%	6.0%	-23.8%	0.4%	19.9%	12.0%	6.6%	6.4%
Number of engines - Group	117,961	167,680	230,598	178,774	184,028	196,403	137,781	132,539	160,411	182,676	192,232	200,232
yoy change	-	42.1%	37.5%	-22.5%	2.9%	6.7%	-29.8%	-3.8%	21.0%	13.9%	5.2%	4.2%
Average price per engine	5,835.8	5,804.5	5,582.9	5,826.4	6,518.0	6,470.9	7,032.9	7,340.5	7,270.1	7,147.8	7,242.1	7,399.3
yoy change		-0.5%	-3.8%	4.4%	11.9%	-0.7%	8.7%	4.4%	-1.0%	-1.7%	1.3%	2.2%
Torqeedo contribution	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3.7**	**30.0**	**31.5**	**33.1**
Group Total	**863.4**	**1,189.1**	**1,529.0**	**1,291.9**	**1,453.2**	**1,530.2**	**1,247.4**	**1,260.2**	**1,479.1**	**1,667.5**	**1,767.4**	**1,870.8**
yoy change	-	37.7%	28.6%	-15.5%	12.5%	5.3%	-18.5%	1.0%	17.4%	12.7%	6.0%	5.9%

Source: DEUTZ, Warburg Research

Revisiting the margin story

We believe DEUTZ' current share price mainly reflects the anticipated top-line momentum but – for good reason – does not account for the possibility of sustainable margin improvement. However, decent Q4/17 results and a moderate margin step-up in 2018 might rekindle investor interest in the margin expansion story.

Historical profitability has been poor

DEUTZ has a history of poor profitability. The average EBITDA margin over the period 2010-2017 was only 9.1% and the average EBIT margin over the same horizon only 2.5%. The reasons for such low profitability levels are rooted in a high fixed cost base in production and the associated dependence on production volumes and, particularly in recent years, high R&D requirements to meet ever stricter emission regulations.

DEUTZ has failed to deliver on its EBIT margin target of ~10% in the past….

As early as in 2010 under the stewardship of then CEO Dr. Helmut Leube, the company communicated its medium-term EBIT margin target of ~10%, which was to be achieved with economies of scale in production and better mix. In the following years, however, DEUTZ completely failed to show discernible progress, which eventually came at the expense of its own credibility. Apart from company-specific issues (e.g. quality issues in 2014 when faster than expected wear of engine parts resulted in warranty claims against DEUTZ), we see the roots of this lack of progress in an unfavourable combination of weakening end markets and higher R&D requirements to comply with ever stricter emission regulations in recent years.

… but this time, it might be different

DEUTZ' new CEO Dr. Frank Hiller is now again aiming for significant improvements in profitability with envisaged margin step-ups of ~100bps p.a. to a level of ~7-8% in the medium term. Considering the company's merely modest success in this respect in the past, we refrain from explicitly modelling such levels in our valuation model. Our price target currently reflects a peak core EBIT margin ("core" excludes the profit share from equity method investments) of only 5.4% in 2020 and a sustainable margin in perpetuity of only 5.1% to account for the cyclical nature of DEUTZ' end markets).

However, we acknowledge that the likelihood of achieving the envisaged margin levels are probably much better now than in the past as the prevailing strong sector environment, which is spurring top-line growth and gross margin expansion, is now coinciding with structural relief on the R&D side as the introduction of a series of ever-stricter emission standards appears to have come to an end.

Margin targets require an improvement of ~300bps in gross profit margin

Against the backdrop of a cumulative revenue decline of >13% over the period 2013-2016, net operating expenses (other operating expenses minus other operating income), selling and administrative costs as a percentage of sales have risen by ~260bps. The share of these cost positons should revert to lower levels as revenues continue to grow. Most of the margin improvement, however, must be derived from gross profit margin expansion and, to a lesser extent, lower R&D costs as a percentage of sales.

In the table below, we illustrate the gross profit margin development necessary to achieve the mid-point of the EBIT margin corridor (7-8%) taking our other assumptions into consideration too.

Development of cost items (in % of sales) over time

	Historical numbers					Detailed planning period			Rough forward projection of trends		
	2013	2014	2015	2016	2017	2018e	2019e	2020e	2021e	2022e	2023e
Recurring EBIT margin	**3.3%**	**0.8%**	**0.4%**	**1.9%**	**2.9%**	**4.1%**	**4.9%**	**5.6%**	**5.9%**	**6.3%**	**6.7%**
EBIT margin target	**7.5%**	**7.5%**	**7.5%**	**7.5%**	**7.5%**	**7.5%**	**7.5%**	**7.5%**	**7.5%**	**7.5%**	**7.5%**
- profit share from at-equity investments	-0.1%	-0.1%	0.5%	0.4%	-0.2%	-0.2%	-0.2%	-0.1%	-0.1%	-0.1%	-0.1%
+ Net operating expenses *	-0.2%	1.2%	0.1%	0.7%	0.1%	0.8%	0.7%	0.4%	0.4%	0.4%	0.4%
+ Administrative costs	2.3%	2.2%	2.9%	2.9%	2.8%	2.6%	2.6%	2.5%	2.5%	2.5%	2.5%
+ Selling costs	4.3%	4.3%	5.5%	5.4%	5.3%	5.2%	5.0%	5.0%	5.0%	5.0%	5.0%
+ R&D costs	4.0%	4.9%	6.1%	6.1%	6.4%	5.4%	5.3%	5.2%	5.2%	5.1%	5.0%
= Required gross profit margin	**17.8%**	**20.0%**	**22.6%**	**23.1%**	**22.0%**	**21.3%**	**20.9%**	**20.5%**	**20.5%**	**20.4%**	**20.3%**
Realized/forecasted gross profit margin	**13.5%**	**13.2%**	**15.4%**	**17.3%**	**17.3%**	**17.9%**	**18.3%**	**18.6%**	**18.9%**	**19.2%**	**19.5%**

* Adjusted for postitive one-off effects in the amoung of EUR 104.1m in FY 2017

Source: DEUTZ, Warburg Research

Positive top-line trend should yield ~130bps gross margin expansion by 2020

To near its margin target, DEUTZ needs to raise its gross profit margin to ~20-21%. While this appears quite ambitious, we acknowledge that

a) such margin levels are generally achievable as indicated by industry leader Cummins, who achieves gross profit margins of ~25%.

b) Despite a cumulative revenue decline of more than 13%, DEUTZ already raised its gross profit margin by ~390bps from only 13.5% in 2013 to 17.3% in 2016 on the back of better sourcing and enhanced efficiency. Against this background, we believe further gross profit margin expansion is likely if output volumes continue to rise.

A closer look at the composition of the cost of sales reveals that a) staff costs represent a relatively high proportion of revenues at ~12%; and b) that current engine output per non-salaried employee is far below historical peak levels seen in 2011 and 2014. Higher output volumes should thus be achievable with only a minor expansion of the workforce and corresponding leverage of staff costs as a percentage of sales. In our scenario below, we assume an annual workforce expansion of 3% in 2018 and wage inflation of 4.3% in 2018 and 2019 and 2% p.a. thereafter, which would reduce staff costs to about 11% by 2020 while engine output per worker would still remain below peak levels until 2019. Cost of materials was inflated in 2017 by a strong surge in demand and corresponding inefficiencies in the supply chain. We thus believe that cost of materials as a percentage of sales of ~58% represents a suitable assumption for the future and sufficiently accounts for raw material price headwinds. Note that the strong workforce expansion in 2017 also reflects effects associated with the acquisition of Torqeedo and IML Motori.

Based on our assumptions, we forecast a gross profit margin expansion of ~130bps by 2020 compared to 2017 levels. Note that 2017 gross profit margin is burdened by supply chain issues resulting from the strong end market recovery seen in 2017. Additional margin support should come from declining R&D costs as a percentage of sales.

Composition of cost of sales over time

	Historical numbers							Detailed planning period			Rough forward projection of trends		
Composition of cost of sales	2011	2012	2013	2014	2015	2016	2017	2018e	2019e	2020e	2021e	2022e	2023e
+ Cost of materials	-	-	-	-	58.0%	56.5%	58.0%	58.0%	58.0%	58.0%	58.0%	58.0%	58.0%
+ Staff costs	-	-	-	-	13.2%	13.1%	11.9%	11.3%	11.3%	11.0%	11.0%	11.0%	11.0%
Staff costs (absolute in EUR)	-	-	-	-	164.8	165.0	175.7	188.8	198.8	204.9	210.0	215.3	220.7
Expansion of workforce	-	-	-	-	-	-	-	181.0	190.6	200.8	205.9	211.0	216.4
in % yoy	-	-15.6%	11.2%	-6.6%	-9.7%	-0.5%	20.6%	3.0%	1.0%	1.0%	0.5%	0.5%	0.5%
Wage inflation	-	-	-	-	-	-	-	7.8	8.2	4.0	4.1	4.2	4.3
Wage inflation in %	-	-	-	-	-	-	-	4.3%	4.3%	2.0%	2.0%	2.0%	2.0%
Non-salaried employees (workers)	2,459	2,377	2,356	2,338	2,221	2,177	2,421	2,494	2,519	2,544	-	-	-
Temporary workers	538	152	456	288	151	182	423	436	440	444			
Total workers	2,997	2,529	2,812	2,626	2,372	2,359	2,844	2,929	2,959	2,988			
Annual engine production	230,598	178,774	184,028	196,403	137,781	132,539	160,411	182,676	192,232	200,232	-	-	-
Engine production per non-salaried employee	**76.9**	**70.7**	**65.4**	**74.8**	**58.1**	**56.2**	**56.4**	**62.4**	**76.3**	**78.7**	-	-	-
+ Depreciation	-	-	-	-	4.1%	3.7%	2.8%	2.8%	2.7%	2.7%	2.7%	2.7%	2.7%
+ Other cost items	-	-	-	-	9.3%	9.4%	10.0%	10.0%	9.8%	9.8%	9.5%	9.2%	8.9%
= Cost of sales	-	-	-	-	84.6%	82.7%	82.7%	82.1%	81.7%	81.4%	81.1%	80.8%	80.5%
Gross profit margin	**-**	**-**	**13.5%**	**13.2%**	**15.4%**	**17.3%**	**17.3%**	**17.9%**	**18.3%**	**18.6%**	**18.9%**	**19.2%**	**19.5%**

Source: DEUTZ, Warburg Research

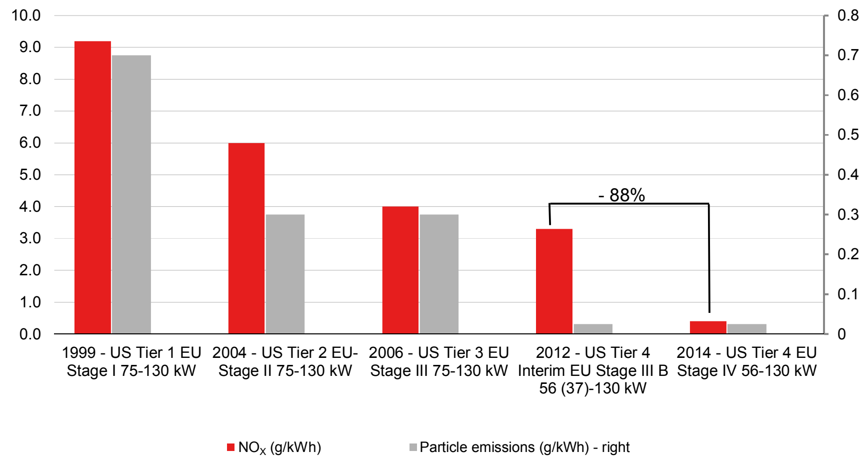
Level of investment in diesel technology to moderate following years of high R&D

The positive gross profit margin improvement between 2013 and 2017 never fed through to the EBIT line and was largely offset by R&D costs which grew by 240bps as a percentage of sales and other cost positions which grew by ~260bps as a percentage of sales over the same period. In recent conversations with clients, we realised that many have completely overlooked the progress already achieved by DEUTZ on gross profit level as EBIT margins have remained mainly flat.

While we expect the share of the remaining cost positions to revert to lower levels as revenues continue to grow, we see R&D cost intensity easing owing to structural relief on the R&D side.

The higher R&D spending in recent years was largely linked to obligatory compliance with new emission regulations for diesel engines in non-road mobile machinery, which have already come into effect (2014: US Tier 4 Final/ EU Stage IV) or are soon to come into effect (2019: EU Stage V).

Emission regulations have become ever stricter in recent years



Source: DEUTZ, Warburg Research

Going forward, we expect relief from the R&D side for several reasons:

a) The next emission standard to be introduced is EU Stage V, which will become effective in January 2019 in the European Union. Since DEUTZ' current engine portfolio is already compliant, additional development requirements in this respect should be limited.

b) Looking beyond the introduction of EU Stage V in 2019, there are no new proposals on the horizon for stricter emissions standards for now. Considering the significant development costs these requirements have entailed for engine manufacturers and equipment OEMs, regulators in different jurisdictions (i.e. the EPA in the US and the European Union) have historically tried to align the technical specification of standards and the timing of their introduction to allow manufacturers to spread development costs over a sufficiently large revenue pool. Furthermore, as long as U.S. President Donald Trump holds office, the risk of a further tightening of emission standards in the US is certainly not any higher. Second, the current standard US Tier 4 final is the equivalent to EU Stage IV, meaning that the European standard EU Stage V is already one emission standard ahead of its US counterpart. In light of the economic burden already shouldered by engine manufacturers and OEMs, we believe it is relatively unlikely that the European Union will introduce a new emission standard EU Stage VI in the near future, i.e. we expect R&D costs for diesel engines to stagnate or even moderate compared to levels seen in recent years.

c) With the acquisition of Torqeedo, DEUTZ entered the market for electric drivetrain solutions in September 2017, which begs the question of the level of spending necessary for this technology. In the course of its eDEUTZ strategy, the company estimates cost related to this technology at around EUR 100m over the next five years, which already includes the acquisition price for Torqeedo (EUR 74m) and necessary R&D spending to adapt the technology to DEUTZ' typical use cases (Torqeedo is specialised in off-board boat engines). Considering that development of a new diesel engine series (or achieving compliance with the next emission standard) historically cost DEUTZ EUR 100-150m (WRe), R&D spending on electric drivetrain technology should have only a marginal impact on overall group R&D.

As a result of this, we expect R&D expenses as a percentage of sales to decline moderately in future even though we do not expect a decline in absolute terms.

Strong Q4/17 results make 2018 margin improvement highly visible

Following the release of full year results for FY 2017 and a very satisfactory Q4/17 operating performance, further margin expansion in 2018 is highly visible and should bolster investor confidence.

Adj. EBIT margin (adj. for a one-off gain for the sale of the Cologne-Deutz site of EUR 98.8m, a one-off gain for the sale of a lease property of EUR 10m and transaction costs related to the acquisition of Torqeedo and IML of EUR 4.7m) came in at 2.9%, which is an improvement of ~100bps compared to prior year's margin of 1.9%. Included and not adjusted in this figure is an impairment on a development project of EUR 8.8m in Q4/17 (negative margin effect of 0.6%) and the negative EBIT contribution of Torqeedo of EUR 4.7m (negative margin effect of 0.3%). Without the impairment, R&D costs in % of sales would have been at 5.8% in 2017 vs. 6.1% in 2016.

Adjusted for the R&D impairment, 2017 profitability would have been 3.5% and profitability in DEUTZ' core business – disregarding the revenue and earnings effects of the recently-acquired Torqeedo – would have even improved to 3.8%.

Emission regulations have become ever stricter in recent years

	Group	Adjustment for Torqeedo	Core business (excl. Torqeedo)
Sales	**1479.1**	**-3.7**	**1475.4**
Reported adj. EBIT	**42.4**	**-**	**42.4**
Margin	*2.9%*	-	*2.9%*
Impairment on R&D project	8.8	-	8.8
Adj. EBIT (excl. R&D impairment)	**51.2**	**4.7**	**55.9**
Margin	*3.5%*	-	*3.8%*

Source: DEUTZ, Warburg Research

Thus, the EBIT margin should improve markedly purely as a result of lower (no) impairment charges with additional upside resulting from higher efficiency as the top line continues to grow. 2018 margin expansion is therefore highly visible and should strengthen confidence.

P&L projections

The following table outlines our P&L projections for the coming years.

P&L projections

in EUR m	2014	2015	2016	2017	2018e	2019e	2020e
Sales	1530.2	1247.4	1260.2	1479.1	1667.5	1767.4	1870.8
in % yoy	-	-18.5%	1.0%	17.4%	12.7%	6.0%	5.9%
Gross Profit	**202.6**	**192.6**	**218.6**	**256.2**	**298.3**	**323.0**	**347.2**
Gross profit margin	13.2%	15.4%	17.3%	17.3%	17.9%	18.3%	18.6%
Research and development	-74.3	-76.3	-77.5	-94.8	-90.0	-94.0	-98.0
in % of sales	-4.9%	-6.1%	-6.1%	-6.4%	-5.4%	-5.3%	-5.2%
Sales and marketing	-65.7	-68.3	-68.0	-78.8	-86.0	-89.0	-93.0
in % of sales	-4.3%	-5.5%	-5.4%	-5.3%	-5.2%	-5.0%	-5.0%
General and administration	-34.3	-36.5	-36.7	-41.5	-43.5	-45.5	-47.5
in % of sales	-2.2%	-2.9%	-2.9%	-2.8%	-2.6%	-2.6%	-2.5%
Other operating income	22.9	29.3	17.7	144.1	18.0	18.0	18.0
in % of sales	1.5%	2.3%	1.4%	9.7%	1.1%	1.0%	1.0%
Other operating expenses	-41.4	-30.6	-26.7	-42.1	-32.0	-29.5	-26.0
in % of sales	-2.7%	-2.5%	-2.1%	-2.8%	-1.9%	-1.7%	-1.4%
Other investment income	1.1	1.0	1.1	0.9	1.1	1.1	1.1
Profit share at-equity investments	1.9	-6.3	-5.1	2.5	2.7	2.7	2.7
in % of sales	0.1%	-0.5%	-0.4%	0.2%	0.2%	0.2%	0.1%
EBITDA	**120.3**	**112.2**	**114.2**	**240.0**	**156.2**	**176.9**	**196.9**
EBITDA Margin	7.9%	9.0%	9.1%	16.2%	9.4%	10.0%	10.5%
EBIT	**12.8**	**4.9**	**23.4**	**146.5**	**68.6**	**86.8**	**104.5**
EBIT Margin	0.8%	0.4%	1.9%	9.9%	4.1%	4.9%	5.6%
Adjustment bridge							
One-offs	0.0	0.0	0.0	-104.1	0.0	0.0	0.0
Adjusted EBIT	**12.8**	**4.9**	**23.4**	**42.4**	**68.6**	**86.8**	**104.5**
Adjusted EBIT Margin	0.8%	0.4%	1.9%	2.9%	4.1%	4.9%	5.6%
Finance income	0.6	0.8	0.3	0.7	0.7	0.7	0.7
Finance expense	-6.7	-4.8	-3.8	-3.1	-3.2	-3.2	-3.2
Net Income	**21.2**	**5.4**	**16.6**	**121.2**	**52.4**	**66.9**	**81.1**
Net Margin	1.4%	0.4%	1.3%	8.2%	3.1%	3.8%	4.3%
EPS (in €)	-	-	-	1.00	0.43	0.55	0.67
Adjusted EPS (in €)	-	-	-	0.22	0.43	0.55	0.67

Source: DEUTZ, Warburg Research

Warburg vs. consensus

Consensus revenue estimates for FY 2018 and 2019 are partly distorted by different approaches to reflecting M&A effects and new orders. We are ~5-6% ahead of consensus revenue estimates and ~5-15% ahead of consensus earnings estimates.

Warburg vs. Consensus

	FY 2017		2018e			2019e			2020e	
	Reported	WRe	Cons	Δ in %	WRe	Cons	Δ in %	WRe	Cons	Δ in %
Sales	**1479.1**	**1667.5**	**1594.2**	**4.6%**	**1767.4**	**1668.8**	**5.9%**	**1870.8**	**1759.5**	**6.3%**
in % yoy	*-*	*12.7%*	*7.8%*	*-*	*6.0%*	*4.7%*	*-*	*5.9%*	*5.4%*	*-*
EBITDA	**240.0**	**156.2**	156.8	-0.4%	**176.9**	169.4	4.4%	**196.9**	174.8	12.6%
EBITDA Margin	*16.2%*	*9.4%*	*9.8%*	*-*	*10.0%*	*10.2%*	*-*	*10.5%*	*9.9%*	*-*
EBIT adjusted	**42.4**	**68.6**	**63.6**	**7.7%**	**86.8**	**78.3**	**10.8%**	**104.5**	**88.3**	**18.4%**
Adjusted EBIT Margin	*2.9%*	*4.1%*	*4.0%*	*-*	*4.9%*	*4.7%*	*-*	*5.6%*	*5.0%*	*-*
EPS	**1.00**	**0.43**	**0.41**	**4.0%**	**0.55**	**0.51**	**8.6%**	**0.67**	**0.59**	**13.6%**

Source: FactSet, Warburg Research

Valuation

- We derive a fair value per share of EUR 9.60 assuming more conservative margin development than held out by management
- In a more optimistic scenario in which we assume the mid-point of the envisaged EBIT margin corridor of 7-8% to be achieved by 2024, we derive a fair value of EUR 12 per share which indicates upside of ~60% based on current share price levels

We continue to take a conservative approach to valuation…

We derive a price target of **EUR 9.60** per share based on a set of relatively conservative assumptions made in our model.

In particular, we assume sales growth rates of only 2-2.5% p.a. during the transitional period and a growth rate of only 1% p.a. in perpetuity to account for the highly cyclical nature of DEUTZ' end markets. Moreover, owing to the limited historical success as regards margin improvement, we refrain from applying the envisaged margin targets for valuation purposes. Instead, we model a core EBIT margin expansion ("core" means excl. the profit share from at-equity investments) to 5.4% in 2020 which is assumed to decline to a sustainable level of only 5.1% during the transitional period. As we assume depreciation to decline as a percentage of sales over the same horizon, this scenario is equivalent to an assumed EBITDA margin expansion to a level of 10.3% in 2020 which declines to a sustainable through-the-cycle EBITDA margin of only 9.5% p.a. (vs. average EBITDA margin of 9.1% over the period 2010-2016).

…but recognise the value potential if margin target is reached

As already outlined, we believe the company's chances of sustainably improving its profitability are much better now than they were in the past owing to the favourable combination of sustained top-line growth – fueled by a supportive sector environment overall – and structural relief on the R&D side. In a second DCF model, we assume the continuation of margin improvement beyond 2020 by about 50bps p.a. until the mid-point of the envisaged EBIT margin corridor is reached in 2024 (management is aiming for an improvement of ~100bps p.a. which would mean that the target margin could be achieved by 2022). All other assumptions remain unchanged.

Under this more optimistic scenario, we derive a fair value of EUR 12 per share, which implies roughly 60% upside potential at current share price levels.

DCF model

Figures in EUR m	Detailed forecast period 2018e	2019e	2020e	Transitional period 2021e	2022e	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e	Term. Value
Sales	1,667	1,767	1,871	1,918	1,965	2,015	2,065	2,117	2,170	2,224	2,268	2,314	2,360	
Sales change	*12.7 %*	*6.0 %*	*5.9 %*	*2.5 %*	*2.5 %*	*2.5 %*	*2.5 %*	*2.5 %*	*2.5 %*	*2.5 %*	*2.0 %*	*2.0 %*	*2.0 %*	*1.0 %*
EBIT	65	83	101	103	105	108	110	112	115	118	119	121	122	
EBIT-margin	*3.9 %*	*4.7 %*	*5.4 %*	*5.4 %*	*5.4 %*	*5.3 %*	*5.3 %*	*5.3 %*	*5.3 %*	*5.3 %*	*5.3 %*	*5.2 %*	*5.2 %*	
Tax rate (EBT)	*30.0 %*	*30.0 %*	*30.0 %*	*30.0 %*	*30.0 %*	*30.0 %*	*30.0 %*	*30.0 %*	*30.0 %*	*30.0 %*	*30.0 %*	*30.0 %*	*30.0 %*	
NOPAT	45	58	70	72	74	75	77	79	80	82	83	85	86	
Depreciation	88	90	92	93	94	95	96	97	98	99	100	102	103	
in % of Sales	*5.3 %*	*5.1 %*	*4.9 %*	*4.9 %*	*4.8 %*	*4.7 %*	*4.6 %*	*4.6 %*	*4.5 %*	*4.5 %*	*4.4 %*	*4.4 %*	*4.4 %*	
Changes in provisions	0	0	0	0	0	0	0	0	0	0	0	0	0	
Change in Liquidity from														
- Working Capital	34	1	15	7	7	7	7	7	8	8	6	7	7	
- Capex	80	75	75	78	82	86	89	93	98	100	102	104	106	
Capex in % of Sales	*4.8 %*	*4.2 %*	*4.0 %*	*4.1 %*	*4.2 %*	*4.2 %*	*4.3 %*	*4.4 %*	*4.5 %*	*4.5 %*	*4.5 %*	*4.5 %*	*4.5 %*	
Other	0	-50	0	0	0	0	0	0	0	0	0	0	0	
Free Cash Flow (WACC Model)	19	122	73	80	79	78	76	75	73	73	75	76	76	79
PV of FCF	19	112	62	63	58	53	48	44	40	38	36	34	31	503
share of PVs	16.89 %			39.05 %										44.05 %

Model parameter

Derivation of WACC:		Derivation of Beta:	
Debt ratio	16.46 %	Financial Strength	0.90
Cost of debt (after tax)	1.4 %	Liquidity (share)	1.25
Market return	7.00 %	Cyclicality	1.50
Risk free rate	1.50 %	Transparency	1.50
		Others	1.40
WACC	**7.50 %**	**Beta**	**1.31**

Valuation (m)

Present values 2030e	638		
Terminal Value	503		
Financial liabilities	46		
Pension liabilities	176		
Hybrid capital	0		
Minority interest	6		
Market val. of investments	101		
Liquidity	144	No. of shares (m)	120.9
Equity Value	**1,158**	**Value per share (EUR)**	**9.58**

Sensitivity Value per Share (EUR)

Beta	WACC	Terminal Growth 0.25 %	0.50 %	0.75 %	**1.00 %**	1.25 %	1.50 %	1.75 %
1.53	8.5 %	8.09	8.18	8.28	8.38	8.49	8.61	8.74
1.42	8.0 %	8.58	8.69	8.81	8.94	9.07	9.22	9.37
1.36	7.7 %	8.86	8.98	9.11	9.25	9.39	9.56	9.73
1.31	7.5 %	9.15	9.28	9.42	**9.58**	9.74	9.92	10.12
1.26	7.2 %	9.46	9.61	9.76	9.94	10.12	10.32	10.54
1.20	7.0 %	9.79	9.96	10.13	10.32	10.53	10.76	11.01
1.09	6.5 %	10.54	10.75	10.97	11.21	11.47	11.76	12.08

Beta	WACC	Delta EBIT-margin -1.5 pp	-1.0 pp	-0.5 pp	**+0.0 pp**	+0.5 pp	+1.0 pp	+1.5 pp
1.53	8.5 %	5.95	6.76	7.57	8.38	9.19	10.00	10.81
1.42	8.0 %	6.33	7.20	8.07	8.94	9.81	10.67	11.54
1.36	7.7 %	6.54	7.44	8.34	9.25	10.15	11.05	11.95
1.31	7.5 %	6.77	7.71	8.64	**9.58**	10.51	11.45	12.38
1.26	7.2 %	7.02	7.99	8.96	9.94	10.91	11.88	12.85
1.20	7.0 %	7.29	8.30	9.31	10.32	11.34	12.35	13.36
1.09	6.5 %	7.89	9.00	10.10	11.21	12.31	13.41	14.52

- Derived fair value considers the value of tax loss carryforwards
- Unlike reported EBIT, EBIT used here excludes the effect of equity method investments
- Other reflects the second purchase price installment of c. EUR 50m for the Cologne-Deutz site

DCF model – optimistic scenario assuming stronger margin expansion as held out by management

	Detailed forecast period			Transitional period										Term Value
Figures in EUR m	**2018e**	**2019e**	**2020e**	**2021e**	**2022e**	**2023e**	**2024e**	**2025e**	**2026e**	**2027e**	**2028e**	**2029e**	**2030e**	
Sales	1,667.5	1,767	1,871	1,918	1,965	2,015	2,065	2,117	2,170	2,224	2,268	2,314	2,360	
Sales change	*12.7%*	*6.0%*	*5.9%*	*2.5%*	*2.5%*	*2.5%*	*2.5%*	*2.5%*	*2.5%*	*2.5%*	*2.0%*	*2.0%*	*2.0%*	*1.0%*
EBIT	64.8	83.0	100.7	114.3	128.4	143.2	154.5	158.7	162.7	166.8	170.1	173.5	177.0	
EBIT-margin	*3.9%*	*4.7%*	*5.4%*	*6.0%*	*6.5%*	*7.1%*	*7.5%*	*7.5%*	*7.5%*	*7.5%*	*7.5%*	*7.5%*	*7.5%*	
Tax rate (EBT)	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	*30%*	
NOPAT	45.3	58.1	70.5	80.0	89.9	100.2	108.1	111.1	113.9	116.7	119.1	121.5	123.9	
Depreciation	87.6	90.1	92.4	93.3	94.1	95.0	95.9	96.7	97.6	99.0	100.4	101.8	103.2	
in % of Sales	*5.3%*	*5.1%*	*4.9%*	*4.9%*	*4.8%*	*4.7%*	*4.6%*	*4.6%*	*4.5%*	*4.5%*	*4.4%*	*4.4%*	*4.4%*	
Change in provisions	0	0	0	0	0	0	0	0	0	0	0	0	0	
Change in liquidity from														
- Working Capital	34	1	15	-3	7	7	7	7	7	8	6	6	6	
- Capex	80	75	75	78	82	86	89	93	98	100	102	104	106	
Capex in % of Sales	*4.8%*	*4.2%*	*4.0%*	*4.1%*	*4.2%*	*4.2%*	*4.3%*	*4.4%*	*4.5%*	*4.5%*	*4.5%*	*4.5%*	*4.5%*	
Other	0.0	-50	0	0	0	0	0	0	0	0	0	0	0	
Free Cash Flow (WACC-model)	19	122	73	98	95	103	108	107	106	108	111	113	114	
PV of FCF	19	111	61	76	69	69	67	62	57	54	51	48	46	704
share of PVs	13%			40%										47%

Model parameter

Derivation of WACC:		Derivation of Beta:	
Debt ratio	13.1%	Financial Strength	0.90
Cost of debt	2.0%	Liquidity	1.25
Market return	7.0%	Cyclicality	1.50
Risk free rate	1.5%	Transparency	1.50
		Others	1.40
WACC	**7.7%**	**Beta**	**1.3**

Valuation (m)

Present values until 2030e	791
Terminal Value	704
Financial liabilities	46
Pension liabilities	176
Hybrid capital	0
Minority interest	6
Market val. of investments	101
Liquidity	144
Equity Value	**1512**

No. of shares (m)	121
Value per share (EUR)	**12.51**

Sensitivity Value per share (EUR)

		Terminal Growth						
Beta	(WACC)	0.3 %	0.50%	0.75%	**1.00%**	1.25%	1.50%	1.75%
1.52	8.7%	10.46	10.59	10.72	10.86	11.01	11.18	11.35
1.41	8.2%	11.15	11.30	11.46	11.63	11.81	12.01	12.22
1.36	8.0%	11.53	11.69	11.87	12.05	12.26	12.47	12.71
1.31	7.7%	11.93	12.11	12.30	**12.51**	12.73	12.98	13.24
1.26	7.5%	12.36	12.56	12.77	13.00	13.25	13.52	13.81
1.21	7.2%	12.82	13.04	13.28	13.53	13.81	14.11	14.44
1.10	6.7%	13.85	14.12	14.42	14.74	15.09	15.47	15.89

Delta EBIT-margin						
-0.02 pp	-0.01pp	-0.01pp	**0.00 pp**	0.01pp	0.01pp	0.02 pp
8.52	9.30	10.08	10.86	11.64	12.42	13.20
9.13	9.96	10.80	11.63	12.46	13.30	14.13
9.46	10.33	11.19	12.05	12.92	13.78	14.64
9.82	10.72	11.61	**12.51**	13.41	14.30	15.20
10.21	11.14	12.07	13.00	13.93	14.86	15.79
10.63	11.60	12.57	13.53	14.50	15.47	16.43
11.58	12.63	13.68	14.74	15.79	16.84	17.89

Source: Warburg Research

Free Cash Flow Value Potential

Warburg Research's valuation tool "FCF Value Potential" reflects the ability of the company to generate sustainable free cash flows. It is based on the "FCF potential" - a FCF "ex growth" figure - which assumes unchanged working capital and pure maintenance capex. A value indication is derived via the perpetuity of a given year’s “FCF potential” with consideration of the weighted costs of capital. The fluctuating value indications over time add a timing element to the DCF model (our preferred valuation tool).

in EUR m	2014	2015	2016	2017	2018e	2019e	2020e
Net Income before minorities	20	4	16	121	53	67	82
+ Depreciation + Amortisation	108	107	91	94	88	90	92
- Net Interest Income	-6	-4	-4	-2	-2	-2	-2
- Maintenance Capex	61	66	59	65	76	71	71
+ Other	-21	-6	0	11	-10	-12	-14
= Free Cash Flow Potential	**52**	**44**	**51**	**163**	**57**	**77**	**91**
FCF Potential Yield (on market EV)	6.0 %	6.5 %	7.7 %	18.5 %	5.8 %	8.2 %	10.3 %
WACC	7.50 %	7.50 %	7.50 %	7.50 %	7.50 %	7.50 %	7.50 %
= Enterprise Value (EV)	**859**	**671**	**657**	**883**	**979**	**932**	**885**
= Fair Enterprise Value	**692**	**581**	**675**	**2,176**	**760**	**1,022**	**1,216**
- Net Debt (Cash)	-98	-98	-98	-98	-65	-99	-133
- Pension Liabilities	176	176	176	176	163	150	136
- Other	0	0	0	0	0	0	0
- Market value of minorities	6	6	6	6	7	7	8
+ Market value of investments	101	101	101	101	101	101	101
= Fair Market Capitalisation	**709**	**598**	**692**	**2,192**	**756**	**1,065**	**1,306**
Aktienanzahl (Mio.)	121	121	121	121	121	121	121
= Fair value per share (EUR)	**5.87**	**4.94**	**5.73**	**18.14**	**6.25**	**8.81**	**10.81**
premium (-) / discount (+) in %					-13.6 %	21.8 %	49.4 %

Sensitivity Fair value per Share (EUR)

	10.50 %	4.23	3.57	4.13	13.00	4.46	6.40	7.93
	9.50 %	4.66	3.93	4.55	14.35	4.93	7.03	8.69
	8.50 %	5.19	4.38	5.07	16.02	5.51	7.82	9.63
WACC	**7.50 %**	**5.87**	**4.94**	**5.73**	**18.14**	**6.25**	**8.81**	**10.81**
	6.50 %	6.75	5.68	6.58	20.91	7.22	10.11	12.36
	5.50 %	7.95	6.69	7.76	24.68	8.54	11.88	14.47
	4.50 %	9.69	8.15	9.45	30.14	10.44	14.45	17.52

- We assume that 100% of PPE capex and 80% of capitalised R&D expenditure represent maintenance capex.
- Others comprises adjustments for taxes reported in the P&L and cash taxes and non-cash effects of at-equity investments
- Tax loss carryforwards considered at balance sheet values and included in market value of investments

Valuation

	2014	2015	2016	2017	2018e	2019e	2020e
Price / Book	1.4 x	1.1 x	1.0 x	1.3 x	1.4 x	1.3 x	1.1 x
Book value per share ex intangibles	2.27	2.60	2.83	3.19	3.65	4.34	5.15
EV / Sales	0.6 x	0.5 x	0.5 x	0.6 x	0.6 x	0.5 x	0.5 x
EV / EBITDA	7.1 x	6.0 x	5.8 x	3.7 x	6.3 x	5.3 x	4.5 x
EV / EBIT	67.1 x	137.0 x	28.1 x	6.0 x	14.3 x	10.7 x	8.5 x
EV / EBIT adj.*	67.1 x	137.0 x	28.1 x	20.8 x	14.3 x	10.7 x	8.5 x
P / FCF	14.2 x	16.6 x	214.2 x	19.2 x	n.a.	20.5 x	20.4 x
P / E	30.6 x	107.1 x	29.7 x	6.6 x	16.8 x	13.2 x	10.8 x
P / E adj.*	30.6 x	107.1 x	29.1 x	30.0 x	16.8 x	13.2 x	10.8 x
Dividend Yield	1.3 %	1.6 %	1.7 %	2.3 %	1.0 %	1.0 %	1.0 %
FCF Potential Yield (on market EV)	6.0 %	6.5 %	7.7 %	18.5 %	5.8 %	8.2 %	10.3 %

*Adjustments made for: -

Consolidated profit and loss

In EUR m	2014	2015	2016	2017	2018e	2019e	2020e
Sales	**1,530**	**1,247**	**1,260**	**1,479**	**1,667**	**1,767**	**1,871**
Change Sales yoy	5.3 %	-18.5 %	1.0 %	17.4 %	12.7 %	6.0 %	5.9 %
COGS	1,328	1,055	1,042	1,223	1,369	1,444	1,524
Gross profit	**203**	**193**	**219**	**256**	**298**	**323**	**347**
Gross margin	*13.2 %*	*15.4 %*	*17.3 %*	*17.3 %*	*17.9 %*	*18.3 %*	*18.6 %*
Research and development	74	76	78	95	90	94	98
Sales and marketing	66	68	68	79	86	89	93
Administration expenses	34	37	37	42	44	46	48
Other operating expenses	41	31	27	42	32	30	26
Other operating income	23	29	18	144	18	18	18
Unfrequent items	0	0	0	105	0	0	0
EBITDA	**120**	**112**	**114**	**240**	**156**	**177**	**197**
Margin	*7.9 %*	*9.0 %*	*9.1 %*	*16.2 %*	*9.4 %*	*10.0 %*	*10.5 %*
Depreciation of fixed assets	52	54	50	46	47	48	49
EBITA	**69**	**58**	**64**	**195**	**109**	**129**	**148**
Amortisation of intangible assets	56	53	41	48	41	42	43
Goodwill amortisation	0	0	0	0	0	0	0
EBIT	**13**	**5**	**23**	**147**	**69**	**87**	**104**
Margin	*0.8 %*	*0.4 %*	*1.9 %*	*9.9 %*	*4.1 %*	*4.9 %*	*5.6 %*
EBIT adj.	**13**	**5**	**23**	**42**	**69**	**87**	**104**
Interest income	1	1	0	1	1	1	1
Interest expenses	7	5	4	3	3	3	3
Other financial income (loss)	3	-5	-4	3	4	4	4
EBT	**7**	**1**	**20**	**144**	**66**	**84**	**102**
Margin	*0.4 %*	*0.1 %*	*1.6 %*	*9.7 %*	*4.0 %*	*4.8 %*	*5.5 %*
Total taxes	13	3	-4	-23	-13	-17	-20
Net income from continuing operations	**20**	**4**	**16**	**121**	**53**	**67**	**82**
Income from discontinued operations (net of tax)	0	0	0	0	0	0	0
Net income before minorities	**20**	**4**	**16**	**121**	**53**	**67**	**82**
Minority interest	-2	-2	-1	0	1	1	1
Net income	**21**	**5**	**17**	**121**	**52**	**67**	**81**
Margin	*1.4 %*	*0.4 %*	*1.3 %*	*8.2 %*	*3.1 %*	*3.8 %*	*4.3 %*
Number of shares, average	121	121	121	121	121	121	121
EPS	**0.18**	**0.04**	**0.14**	**1.00**	**0.43**	**0.55**	**0.67**
EPS adj.	0.18	0.04	0.14	0.22	0.43	0.55	0.67

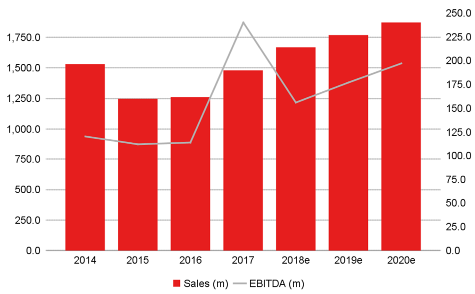
*Adjustments made for:

Guidance: Clear sales increase with moderately higher EBIT margin

Financial Ratios

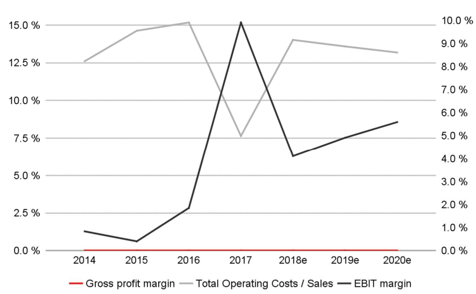
	2014	2015	2016	2017	2018e	2019e	2020e
Total Operating Costs / Sales	12.6 %	14.6 %	15.2 %	7.6 %	14.0 %	13.6 %	13.2 %
Operating Leverage	-13.8 x	3.3 x	367.9 x	30.3 x	-4.2 x	4.4 x	3.5 x
EBITDA / Interest expenses	18.0 x	23.4 x	30.1 x	77.4 x	49.2 x	55.8 x	62.1 x
Tax rate (EBT)	-191.0 %	-288.9 %	19.6 %	15.9 %	20.0 %	20.0 %	20.0 %
Dividend Payout Ratio	43.4 %	241.7 %	52.9 %	15.0 %	16.0 %	12.5 %	10.4 %
Sales per Employee	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Sales, EBITDA
in EUR m



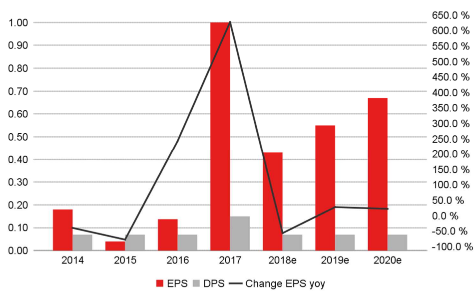
Source: Warburg Research

Operating Performance
in %



Source: Warburg Research

Performance per Share



Source: Warburg Research

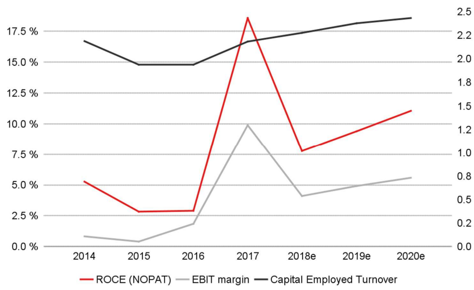
Consolidated balance sheet

In EUR m	2014	2015	2016	2017	2018e	2019e	2020e
Assets							
Goodwill and other intangible assets	212	177	149	213	192	168	143
thereof other intangible assets	212	177	149	213	192	168	143
thereof Goodwill	0	0	0	0	0	0	0
Property, plant and equipment	292	289	286	273	287	295	303
Financial assets	8	6	8	7	7	7	7
Other long-term assets	115	118	122	110	121	134	149
Fixed assets	**626**	**590**	**564**	**603**	**607**	**605**	**602**
Inventories	245	252	253	287	315	324	343
Accounts receivable	122	101	114	143	155	160	169
Liquid assets	102	113	92	144	110	145	179
Other short-term assets	54	33	37	36	43	46	49
Current assets	**523**	**498**	**496**	**609**	**624**	**675**	**740**
Total Assets	**1,149**	**1,088**	**1,060**	**1,213**	**1,232**	**1,280**	**1,343**
Liabilities and shareholders' equity							
Subscribed capital	309	309	309	309	309	309	309
Capital reserve	29	29	29	29	29	29	29
Retained earnings	134	134	136	249	284	343	416
Other equity components	14	18	17	12	12	12	12
Shareholders' equity	486	490	491	599	634	693	766
Minority interest	25	5	0	0	0	0	0
Total equity	**511**	**496**	**491**	**599**	**634**	**693**	**766**
Provisions	202	187	190	271	258	244	231
thereof provisions for pensions and similar obligations	202	187	190	176	163	150	136
Financial liabilities (total)	88	74	60	46	46	46	46
thereof short-term financial liabilities	15	15	16	18	18	18	18
Accounts payable	171	170	162	208	215	228	241
Other liabilities	177	163	156	90	80	70	60
Liabilities	**638**	**593**	**569**	**614**	**598**	**587**	**577**
Total liabilities and shareholders' equity	**1,149**	**1,088**	**1,060**	**1,213**	**1,232**	**1,280**	**1,343**

Financial Ratios

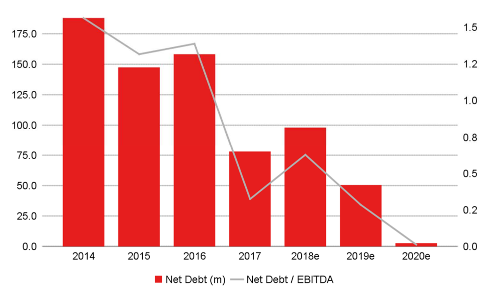
	2014	2015	2016	2017	2018e	2019e	2020e
Efficiency of Capital Employment							
Operating Assets Turnover	3.1 x	2.6 x	2.6 x	3.0 x	3.1 x	3.2 x	3.3 x
Capital Employed Turnover	2.2 x	1.9 x	1.9 x	2.2 x	2.3 x	2.4 x	2.4 x
ROA	3.4 %	0.9 %	2.9 %	20.1 %	8.6 %	11.1 %	13.5 %
Return on Capital							
ROCE (NOPAT)	5.3 %	2.8 %	2.9 %	18.6 %	7.8 %	9.4 %	11.1 %
ROE	4.4 %	1.1 %	3.4 %	22.2 %	8.5 %	10.1 %	11.1 %
Adj. ROE	4.4 %	1.1 %	3.4 %	4.8 %	8.5 %	10.1 %	11.1 %
Balance sheet quality							
Net Debt	188	148	158	78	98	51	3
Net Financial Debt	-14	-39	-32	-98	-65	-99	-133
Net Gearing	36.8 %	29.8 %	32.3 %	13.1 %	15.5 %	7.3 %	0.4 %
Net Fin. Debt / EBITDA	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Book Value / Share	4.0	4.1	4.1	5.0	5.2	5.7	6.3
Book value per share ex intangibles	2.3	2.6	2.8	3.2	3.7	4.3	5.1

ROCE Development



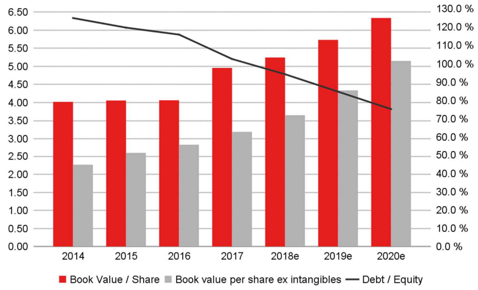
Source: Warburg Research

Net debt
in EUR m



Source: Warburg Research

Book Value per Share
in EUR



Source: Warburg Research

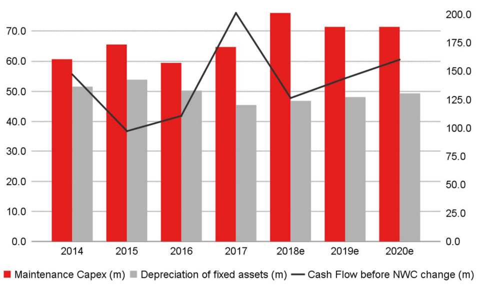
Consolidated cash flow statement

In EUR m	2014	2015	2016	2017	2018e	2019e	2020e
Net income	21	5	17	121	52	67	81
Depreciation of fixed assets	52	54	50	46	47	48	49
Amortisation of goodwill	0	0	0	0	0	0	0
Amortisation of intangible assets	56	53	41	48	41	42	43
Increase/decrease in long-term provisions	18	-15	3	-14	-14	-13	-13
Other non-cash income and expenses	0	0	0	0	0	0	0
Cash Flow before NWC change	**147**	**98**	**111**	**201**	**126**	**144**	**160**
Increase / decrease in inventory	-21	-7	-1	-28	-28	-9	-19
Increase / decrease in accounts receivable	27	21	-12	-24	-13	-5	-9
Increase / decrease in accounts payable	-30	-2	-7	44	7	13	13
Increase / decrease in other working capital positions	-15	-11	-30	-84	-28	-25	-27
Increase / decrease in working capital (total)	-39	2	-51	-91	-62	-26	-42
Net cash provided by operating activities [1]	**108**	**99**	**60**	**110**	**65**	**118**	**118**
Investments in intangible assets	0	0	0	0	0	0	0
Investments in property, plant and equipment	-61	-68	-58	-68	-80	-75	-75
Payments for acquisitions	0	0	0	-84	0	0	0
Financial investments	0	0	0	0	0	0	0
Income from asset disposals	5	4	3	125	0	0	0
Net cash provided by investing activities [2]	**-56**	**-64**	**-55**	**-27**	**-80**	**-75**	**-75**
Change in financial liabilities	-3	-15	-13	-20	0	0	0
Dividends paid	-9	-8	-8	-8	-18	-8	-8
Purchase of own shares	0	0	0	0	0	0	0
Capital measures	0	-3	0	-1	0	0	0
Other	0	0	-1	0	0	0	0
Net cash provided by financing activities [3]	**-11**	**-26**	**-23**	**-30**	**-18**	**-8**	**-8**
Change in liquid funds [1]+[2]+[3]	**41**	**9**	**-18**	**53**	**-33**	**34**	**34**
Effects of exchange-rate changes on cash	2	2	-2	-1	0	0	0
Cash and cash equivalent at end of period	**102**	**113**	**92**	**144**	**110**	**145**	**179**

Financial Ratios

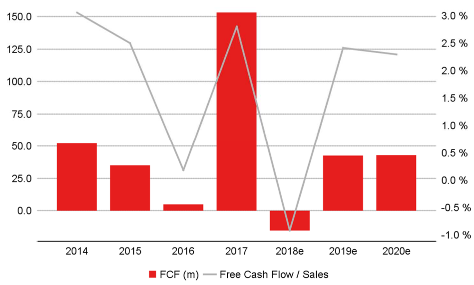
	2014	2015	2016	2017	2018e	2019e	2020e
Cash Flow							
FCF	52	35	5	153	-15	43	43
Free Cash Flow / Sales	3.1 %	2.5 %	0.2 %	2.8 %	-0.9 %	2.4 %	2.3 %
Free Cash Flow Potential	52	44	51	163	57	77	91
Free Cash Flow / Net Profit	220.8 %	577.8 %	13.9 %	34.2 %	-29.3 %	63.7 %	52.9 %
Interest Received / Avg. Cash	0.7 %	0.7 %	0.3 %	0.6 %	0.6 %	0.5 %	0.4 %
Interest Paid / Avg. Debt	7.5 %	5.9 %	5.7 %	5.9 %	7.0 %	7.0 %	7.0 %
Management of Funds							
Investment ratio	4.0 %	5.5 %	4.6 %	4.6 %	4.8 %	4.2 %	4.0 %
Maint. Capex / Sales	4.0 %	5.3 %	4.7 %	4.4 %	4.6 %	4.0 %	3.8 %
Capex / Dep	56.8 %	63.6 %	63.7 %	73.0 %	91.3 %	83.3 %	81.2 %
Avg. Working Capital / Sales	12.0 %	15.2 %	15.4 %	14.4 %	14.3 %	14.5 %	14.1 %
Trade Debtors / Trade Creditors	71.3 %	59.7 %	69.9 %	68.8 %	72.3 %	70.2 %	70.2 %
Inventory Turnover	5.4 x	4.2 x	4.1 x	4.3 x	4.3 x	4.5 x	4.4 x
Receivables collection period (days)	29	30	33	35	34	33	33
Payables payment period (days)	47	59	57	62	57	58	58
Cash conversion cycle (Days)	26	36	40	32	35	32	32

CAPEX and Cash Flow
in EUR m



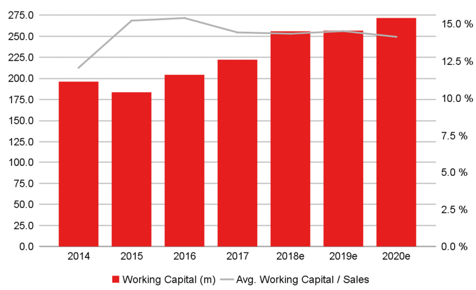
Source: Warburg Research

Free Cash Flow Generation



Source: Warburg Research

Working Capital



Source: Warburg Research

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Company	Disclosure	Link to the historical price targets and rating changes (last 12 months)
DEUTZ	–	http://www.mmwarburg.com/disclaimer/disclaimer_en/DE0006305006.htm

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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.

WARBURG RESEARCH GMBH – ANALYSED RESEARCH UNIVERSE BY RATING

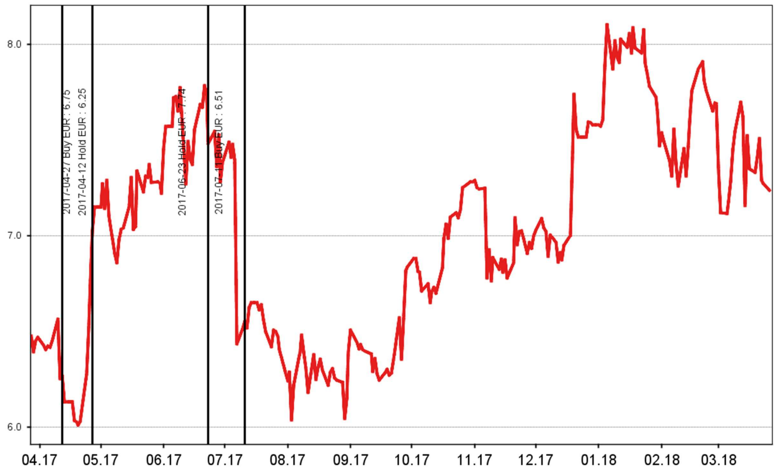
Rating	Number of stocks	% of Universe
Buy	110	53
Hold	92	44
Sell	5	2
Rating suspended	0	0
Total	**207**	**100**

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	30	73
Hold	11	27
Sell	0	0
Rating suspended	0	0
Total	**41**	**100**

PRICE AND RATING HISTORY DEUTZ AS OF 27.03.2018



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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