May 29th, 2024
Research update

SMC Research
Small and Mid Cap Research

Platz 1 Europe Industrials (2018)
Platz 2 German Software & IT (2018)
Platz 1 German Software & IT (2017)
Mehrfacher Gewinner der renommierten Refinitiv Analyst Awards

Pyrum Innovations AG

A strong growth spurt is getting closer

Rating: Speculative Buy (unchanged) | **Price:** 35.30 € | **Price target:** 59.00 € (prev.: 59.50 €)

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Current development

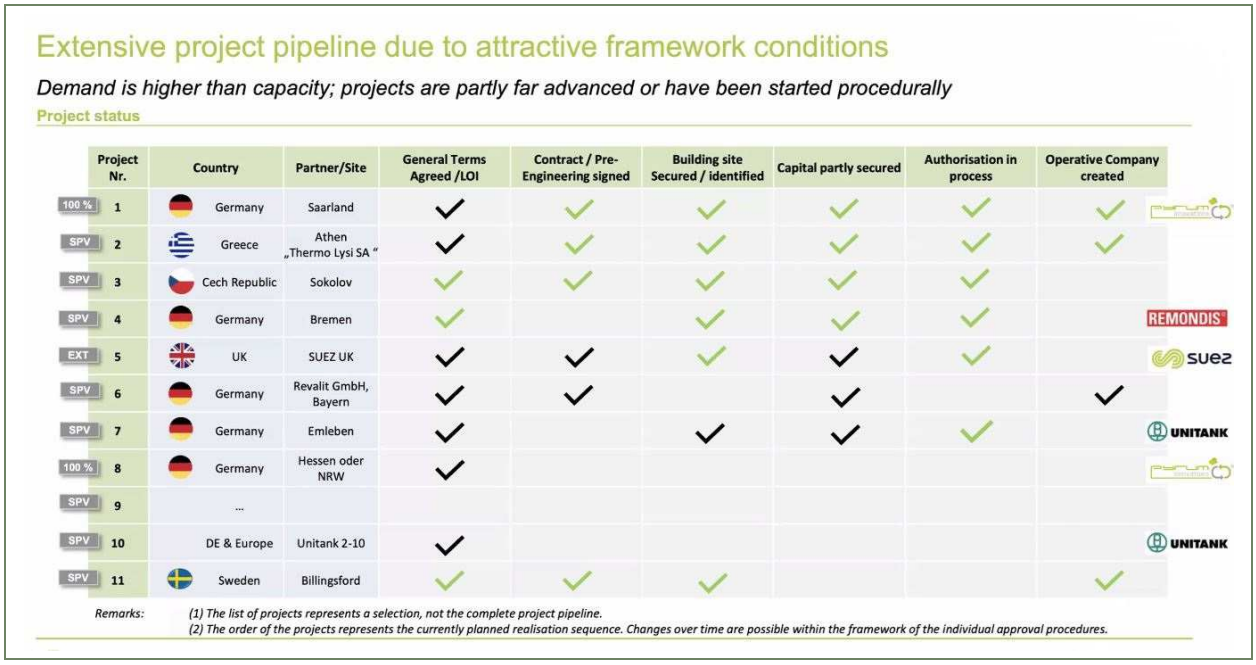
Basic data

Based in:	Dillingen / Saar
Sector:	Recycling
Headcount:	93
Accounting:	HGB
Ticker:	PYR:GR
ISIN:	DE000A2G8ZX8
Price:	35.30 Euro
Market segment:	Scale
Number of shares:	3.25 m
Market Cap:	114.9 m Euro
Enterprise Value:	133.0 m Euro
Free Float:	approx. 38 %
Price high/low (12 M):	53.00 / 29.80 Euro
Øturnover (12 M Xetra):	48,500 Euro

Sales still low, loss high

Pyrum has largely confirmed the very detailed preliminary figures for 2023 published in March. According to the report, the company was able to increase turnover by 17 percent to EUR 1.15 m, but fell well short of original expectations, as pellet production of recovered carbon black remained significantly below the targeted volume (see below). At EUR 12.8 m, total output was well above revenue but below the previous year (EUR 19.1 m), reflecting the progress made in the construction of the second and third production lines. Revenue is still far from covering costs, EBIT (EUR -9.2 m, previous year: EUR -7.6 m) and net income (EUR -9.5 m, previous year: EUR -7.8 m) are still clearly negative, as is the free cash flow (EUR -17.9 m, previous year: EUR -27.8 m). This was partially offset by the positive financing cash flow of EUR 9.7 m, which resulted in particular from additional BASF loans (EUR 9 m) and grants. Nevertheless, liquidity fell from EUR 12.5 m to EUR 4.3 m over the course of the year. Equity also decreased with the annual loss, from EUR 31.9 m to EUR 22.4 m, so that the equity ratio fell from 64.0 percent to 43.9 percent over the course of the year, although it remains comfortable. For a more detailed analysis of the (to a large

FY ends: 31.12.	2022	2023	2024e	2025e	2026e	2027e
Sales (m Euro)	1.0	1.1	3.5	18.1	37.2	63.1
EBIT (m Euro)	-7.6	-9.1	-11.8	-3.2	9.8	31.1
Net profit	-7.8	-9.5	-12.3	-5.3	6.0	25.3
EpS	-2.40	-2.93	-3.14	-1.37	1.55	6.48
Dividend per share	0.00	0.00	0.00	0.00	0.00	0.00
Sales growth	6.5%	16.8%	205.4%	417.8%	105.0%	69.7%
Profit growth	-	-	-	-	-	318.6%
PSR	116.97	100.17	32.80	6.33	3.09	1.82
PER	-	-	-	-	19.0	4.5
PCR	-	-	-	-	9.1	3.6
EV / EBIT	-	-	-	-	13.5	4.3
Dividend yield	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



Project pipeline (SPV = Special Purpose Vehicle); Source: company

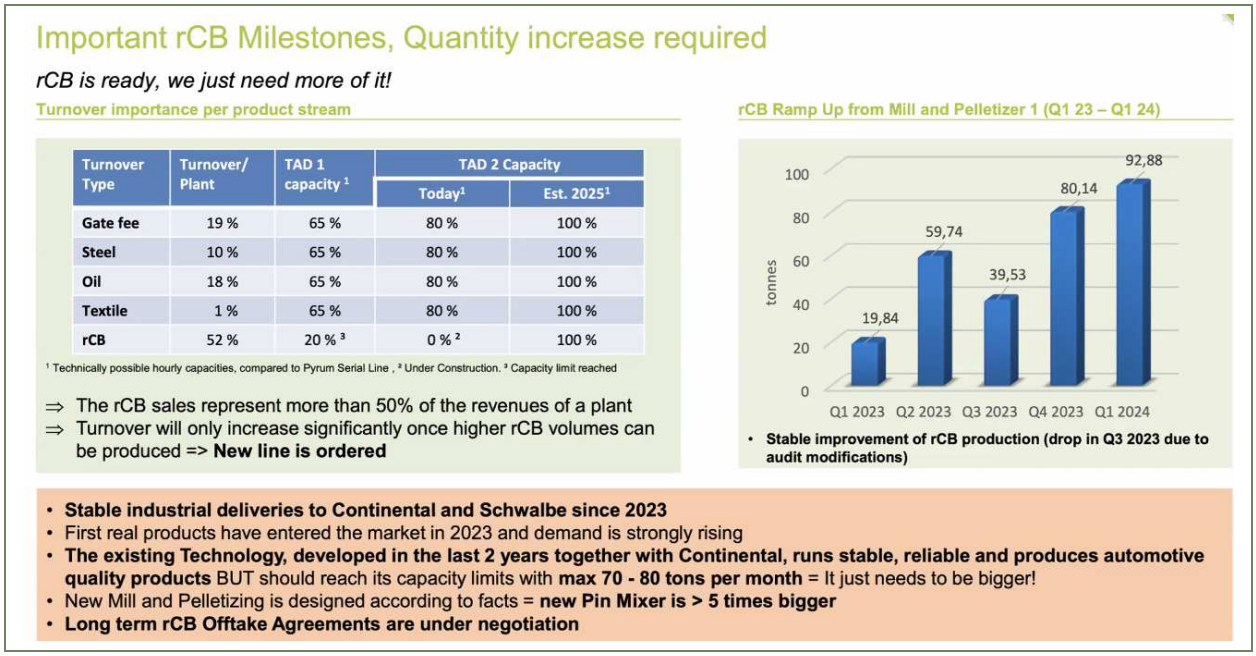
extent identical preliminary) figures, please refer to our update from 9 April.

Important progress

Much more important for the company than the figures for 2023, however, is the progress that Pyrum has made in realising its expansion plans. The two new production lines at the headquarters were largely completed. Warm commissioning was started for the first of these, and since then the plant has been gradually ramped up to 75 to 80 percent of its planned capacity. The knowledge gained from this process has been used for minor optimisations on the second new line, which has started warm commissioning at the end of May and should also quickly reach an output level of 75 percent. At the same time, Pyrum is already preparing to build its next own plant in Perl-Besch in Saarland. The reactors for three production lines – the standard size of a production facility – have already been ordered and the earthworks and foundations are due to start in summer 2024, so that commissioning can take place at the beginning of 2026 as planned. The first projects with partners are also moving towards the starting point. Eight of these are now at an advanced stage. The figure above illustrates the status one year ago (black ticks) and currently (additional green ticks), which clearly shows that preparations are now well advanced. The company assumes that the investment decision for the two plants in Bremen with Remondis and in Emleben with Unitank could be made this year and realisation could be initiated. In addition, the licences for the plants have already been applied for in Greece and the Czech Republic.

Expansion of pellet production

Progress has also been made in the production of rCB pellets. The output of the grinding and pelleting plant now continuously meets the high requirements of the automotive industry, so that pellets are supplied to Continental and the bicycle tyre manufacturer Ralf Bohle ("Schwalbe"). The company has also been authorised as a supplier by Pirelli and Hankook. However, the production volume is still a bottleneck at the moment. Although it increased to around 93 tonnes in the first quarter (see figure on the next page on the right), it is still below plan. The target was actually up to 650 kg rCB per hour, which was to be produced from the output of the first production line, but at the moment the plant only manages 250 kg/h at peak times. Overall, only around 20 percent of the planned capacity is currently being achieved (see figure on the next page on the left: TAD 1 = production line 1) and



Development and status of production, especially of rCB production; source: Company

not 65 percent as for the other products (to reach 100 percent, the first line would have to be expanded). The pelletizing system must continuously validate itself in order to determine, in response to the input consistency (the recycled carbon produced is not a completely homogeneous mass), the amount of water necessary to achieve the specified degree of hardness of the pellets. Among other things, the IT hardware and software are further optimised here in order to achieve acceleration, although the size of the plant itself sets certain limits for optimisation. A new grinding and pelletising system has already been ordered for the new production lines two and three, which is to be able to produce 1,350 kg/h. The manufacturer has carried out extensive tests with the material from Pyrum and provided corresponding guarantees. The first parts of the system have already been delivered, but there are delivery problems with some components that come from the USA. Nevertheless, assembly and commissioning are scheduled for the end of the year.

Sales to increase significantly

rCB pellet production is of great importance for the overall revenue that can be generated from the recycling of used tyres. According to the current calculation with the prices that can now be achieved (which are significantly higher than at the time of the IPO in 2021 – at the same time, however, the investment costs for the plant have also risen from EUR 25 - 27 m to EUR 40 m), around 54 percent or around EUR 6.2 m of the target revenue (around EUR 11.5 m) of a plant with three production lines is attributable to pellet sales (see figure on the next page). As production from the first line is currently still lower than planned and the larger new plant will only be commissioned towards the end of the year, the carbon produced with lines two and three cannot yet be processed into pellets in the current year, thus reducing the revenue potential, as pellets realise a multiple of the price of carbon. The production of thermolysis oil for BASF, on the other hand, will increase significantly. However, this only accounts for just under 40 percent of the output (measured in kg in relation to the rubber input), while the proportion of carbon is 44 percent. Overall, the company expects revenue from production to increase to between EUR 2.5 m and EUR 3.5 m in 2024. Another around EUR 0.5 m is expected to come from consulting contracts for partner projects, meaning that consolidated sales this year are to total between EUR 3.0 and 4.0 m. Due to the start of construction in Perl-Besch, total output will be significantly higher again, at around EUR 25 to 30 m. The major investments and the strong enlargement of the organisation as a result of the expan-

sion continue to result in a high loss, which the company expects to be between EUR 11 and 13 m at group EBIT level in the current year.

Calculation for a plant with three lines; source: Company

Further financing measures required for expansion

In view of the high level of investment and the loss situation, the continued financing of activities remains a very important factor. Liquidity has fallen to EUR 4.5 m at the end of 2023, but the company concluded a major financing agreement with BASF last November, according to which BASF is to provide EUR 25 m for the construction of new plants. Of this, two tranches (EUR 3 m and EUR 8,3 m) have been called up by now. BASF will double the total volume once again if Pyrum itself succeeds in raising funds totalling EUR 50 m. These can come from the placement of shares or bonds, for example, but also from partners who finance new investments. If the final investment decision is made for two projects this year, this amount would be reached as soon as the partners have provided the necessary funding. However, Pyrum will probably also raise further equity in order to keep the balance sheet ratios at a sound level – the target is an equity ratio of at least 30 percent.

Outlook within expectations

We have already assumed two 10-percent capital increases in our model, one this year and one next year, and still consider this to be realistic. The company's forecast for 2024 also harmonises well with our estimates in other respects. We had previously assumed revenue of EUR 0.5 m from consulting contracts – which is exactly in line with the outlook – and revenue of EUR 3.3 m from the plant in Dillingen (Pyrum forecast EUR 2.5 to 3.5 m). Taking into account the latest information on output, prices and available capacities, we have moderately revised our revenue planning and now expect sales of EUR 3.0 m from production, totalling EUR 3.5 m. Together with the only slightly adjusted cost estimates, we now anticipate EBIT of EUR -11.8 m (previously: EUR -11.5 m).

Strong expansion

The revision of the calculation also affected sales in subsequent periods, with revenue from the main plant in Dillingen in particular being lower due to lower capacities on production line 1. According to the management, the capacity of the first line can be expanded for an investment of EUR 2 m, which we have factored in in 2025. The remaining revenue structure is

Revenue model (m Euro)	2024	2025	2026	2027	2028	2029	2030	2031
Revenue plant Dillingen	3.0	7.8	10.0	10.0	10.0	10.0	10.0	10.0
Further own plants (total number)			*1*	*2*	*3*	*4*	*5*	*6*
Revenue further plants			5.6	17.1	29.4	42.5	55.6	66.7
SPVs (total number)	*3*	*5*	*8*	*11*	*12*	*13*	*14*	*15*
Revenue sale of plants/Consulting	0.5	10.4	20.7	27.6	27.6	6.9	6.9	6.9
Other revenue SPVs (maintenance etc.)			0.9	1.5	2.4	3.3	3.6	3.9
Plants without SPV (total number)			*1*	*2*	*3*	*4*	*5*	*6*
Revenue plants without SPV				6.9	6.9	6.9	6.9	6.9
Total revenue	**3.5**	**18.1**	**37.2**	**63.1**	**76.3**	**69.7**	**83.0**	**94.4**

Estimates SMC-Research

m Euro	12 2024	12 2025	12 2026	12 2027	12 2028	12 2029	12 2030	12 2031
Sales	3.5	18.1	37.2	63.1	76.3	69.7	83.0	94.4
Sales growth		417.8%	105.0%	69.7%	20.9%	-8.7%	19.1%	13.8%
EBIT margin	-337.4%	-17.8%	26.4%	49.4%	51.1%	38.8%	42.9%	45.3%
EBIT	**-11.8**	**-3.2**	**9.8**	**31.1**	**39.0**	**27.0**	**35.6**	**42.7**
Tax rate	0.0%	0.0%	5.0%	5.0%	10.0%	33.0%	33.0%	33.0%
Adjusted tax payments	0.0	0.0	0.5	1.6	3.9	8.9	11.8	14.1
NOPAT	**-11.8**	**-3.2**	**9.3**	**29.6**	**35.1**	**18.1**	**23.9**	**28.6**
+ Depreciation & Amortisation	3.5	8.1	10.9	12.6	15.9	19.2	22.5	25.8
+ Increase long-term accruals	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5
+ Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gross operating cash flows	-8.2	5.1	20.5	42.4	51.3	37.6	46.8	54.9
- Increase Net Working Capital	-0.2	-1.1	-1.1	-1.9	-1.5	-1.4	-1.7	-1.9
- Investments in fixed assets	-30.9	-39.1	-42.1	-42.1	-36.1	-36.1	-36.1	-36.1
Free cash flow	**-39.3**	**-35.0**	**-22.7**	**-1.5**	**13.7**	**0.2**	**9.1**	**17.0**

SMC estimation model

unchanged; in particular, we have left income from SPVs unchanged. With regard to 2025 and 2026, it will be of greater importance when the components for the partner projects are ordered and recognised in Pyrum's sales – in our model, shifts between 2025 (possibly lower than calculated at the moment) and 2026 (possibly higher) are possible. The company expects to break even in 2026, and we have also assumed a positive EBIT of EUR 9.8 m for the first time for that period (with sales of EUR 37.2 m). The expansion of the company's own capacities and the realisation of numerous partner projects will subsequently lead to an increase in revenue to EUR 94.4 m and EBIT to EUR 42.7 m by the end of the detailed forecast period. The apparently very high margin is due to the fact that we have only taken into account the net income from the sale of components and not the total revenue and costs of procurement, as it is not yet clear to what extent these figures will be recognised in Pyrum's income statement. The table on the previous page shows our updated revenue model and the table above shows the development of the key cash flow figures up to 2031. Further details can be found in the Annex.

Frame parameters updated

Subsequently, we continue to calculate the terminal value with a fifteen percent discount to the target margin of 2031 and a "perpetual" cash flow growth of 1 percent p.a. However, we have once again slightly adjusted the target equity ratio (from 45.0 to 40.0 percent – the company is currently aiming for "at least 30 percent"). The cost of equity according to CAPM remains at 10.0 percent (with: safe interest rate of 2.5 percent, market risk premium of 5.8 percent and beta factor of 1.3), resulting in a new WACC rate of 6.2 percent (previously 6.5 percent) with an unchanged interest rate on borrowed capital of 5.5 percent and a tax rate for the tax shield of 33 percent.

Price target now EUR 59.00

The fair value we have determined now amounts to EUR 230.2 m or EUR 58.98 per share, from which we derive a new price target of EUR 59.00 (a sensitivity analysis for determining the price target can be found in the Annex), which has thus changed only very slightly as a result of the updates. On a scale of 1 (very low) to 6 (very high), we continue to rate the forecast risk of our estimates as clearly above average at five points, since the data on the operation of the

industrial plant in its final design is still limited and, in addition, the marketing of the plant to third parties is still in its early stages.

Conclusion

In rolling out its ambitious expansion strategy for the innovative process for recycling used tyres, Pyrum has to overcome many challenges – from supply bottlenecks in plant engineering and necessary machine optimisations in rCB pellet production to securing major financing measures – and has so far mastered these very well overall, despite certain unavoidable delays. The certification as an automotive supplier in the field of safety-relevant products is certainly an accolade, and we also regard the major financing commitment from BASF as an important milestone.

Revenues are still low and the expansion of the organisation and the extensive investments in the expansion of capacities are resulting in a high loss. But this investment phase will most likely be followed by a very strong increase in revenue and a significant improvement in profitability. The basis for this is the expansion of the first plant and the realisation of further plants. Preparations for the construction of the company's next own production facility in Saarland will already start in the summer, and eight projects with partners are now at an advanced stage, meaning that the final investment decision could be made for at least two of them this year.

Although Pyrum still needs to raise further funds in order to continue progressing at a fast pace, we assume that this will be possible with the documented great progress.

The expansion mapped in our valuation model leads to a current fair value of EUR 59.00 per share, although we have already factored in a hypothetical dilution of 20 percent due to future equity measures. This means that the major growth opportunities currently offer upside potential of almost 70 percent. On this basis, our rating remains “Speculative Buy”.

Annex I: SWOT analysis

Strengths

- Patent-protected, innovative solution for scrap tyre recycling and the production of high-quality raw materials (thermolysis oil, recovered carbon black).
- The plant has been in regular operation since 2020; capacities are currently being tripled.
- Strong focus on R&D with participation in numerous important research projects.
- Strong partners: BASF and Continental are shareholders and close cooperation partners. The chemical group also supports the expansion financially.
- The founders run the company.
- With an equity ratio of 43.9 percent (31.12.), the balance sheet structure remains sound.

Weaknesses

- Relatively short period of operation of the plant in the final design.
- Revenue has been low so far and was below plan in 2023 as the throughput of the pelletising machine is still too low. At the moment, the company is still operating at a clear loss.
- The construction of Pyrum's own second and third production lines has been somewhat delayed and projects with third parties as well, significantly so. No construction of a plant for third parties has yet been started.
- Major binding funding commitments from project partners are still pending.
- Small team, dependent on key people.

Opportunities

- The strong expansion of the company's own plant in Dillingen will ensure increasing revenue with high margins. Together with partners, numerous other plants are also planned, and the project pipeline is being continuously expanded.
- The sale of plants to third parties provides revenue leverage.
- Due to the great need for efficient scrap tyre recycling, the demand could increase strongly after first successful projects.
- The market environment in the commodities sector is currently comfortable. Especially the demand for carbon black is high, as so far 50 percent of the volume comes from Russia.
- Policy makers are pushing for the development of a circular economy in the tyre industry. By banning the use of scrap tyre granulate for various purposes, the EU is increasing the pressure for recycling. In some countries, thermal recycling is already prohibited as well.

Threats

- The capital requirements for further expansion are still being covered to a large extent by borrowed capital, which increases debt.
- Due to price increases for plant components, the necessary investment sum has increased significantly (but the potential revenue has increased as well).
- Bank financing of new plants is a challenging task due to the still limited database and is also becoming more expensive due to interest rate developments.
- A significant drop in raw material prices, for example in the event of a recession, could reduce revenue (however, a minimum price for thermolysis oil has been agreed with BASF).
- With advances in recycling, the raw material “used tyres” could become a scarce resource.
- Alternative recycling technologies could prove more efficient.

Annex II: Balance sheet and P&L estimation

Balance sheet estimation

m Euro	2023 act.	2024e	2025e	2026e	2027e	2028e	2029e	2030e	2031e
ASSETS									
I. Total non-current	45.1	72.5	103.4	134.6	164.0	184.2	201.1	214.7	224.9
1. Intangible assets	5.6	5.0	4.3	3.7	3.0	2.4	1.7	1.1	0.4
2. Tangible assets	39.5	61.5	84.1	106.8	128.0	145.8	160.3	171.5	179.5
II. Total current assets	5.7	10.7	15.5	13.5	20.5	35.8	37.9	41.7	50.8
LIABILITIES									
I. Equity	22.4	21.5	27.5	33.5	58.8	89.5	104.3	117.4	132.4
II. Accruals	3.2	3.4	3.6	3.8	4.1	4.4	4.8	5.2	5.7
III. Liabilities									
1. Long-term liabilities	18.0	51.0	78.7	99.4	108.3	111.3	114.2	117.2	120.2
2. Short-term liabilities	7.3	7.6	9.4	11.6	13.6	15.1	15.9	16.7	17.7
TOTAL	**50.9**	**83.5**	**119.2**	**148.4**	**184.8**	**220.3**	**239.2**	**256.6**	**276.0**

P&L estimation

m Euro	2023 act.	2024e	2025e	2026e	2027e	2028e	2029e	2030e	2031e
Sales	1.1	3.5	18.1	37.2	63.1	76.3	69.7	83.0	94.4
Total output	12.8	28.3	26.5	63.6	89.5	102.7	96.1	109.4	120.8
Gross profit	1.4	1.6	16.5	34.0	58.3	69.9	61.7	73.4	83.2
EBITDA	-7.0	-8.4	4.9	20.8	43.7	54.1	44.6	55.3	64.1
EBIT	-9.1	-11.8	-3.2	9.8	31.1	39.0	27.0	35.6	42.7
EBT	-9.5	-12.2	-5.3	6.4	26.7	34.1	22.3	30.8	37.8
EAT (before minorities)	-9.5	-12.3	-5.3	6.0	25.3	30.6	14.9	20.5	25.2
EAT	-9.5	-12.3	-5.3	6.0	25.3	30.6	14.9	20.5	25.2
EPS	-2.93	-3.14	-1.37	1.55	6.48	7.85	3.81	5.26	6.46

Annex III: Cash flows estimation and key figures

Cash flows estimation

m Euro	2023 act.	2024e	2025e	2026e	2027e	2028e	2029e	2030e	2031e
CF operating	-6.2	-9.3	-0.2	12.6	31.7	40.4	27.9	36.5	44.2
CF from investments	-11.7	-30.9	-39.1	-42.1	-42.1	-36.1	-36.1	-36.1	-36.1
CF financing	9.7	44.8	41.4	24.5	13.5	8.0	8.1	0.8	-1.8
Liquidity beginning of year	12.5	4.3	8.9	11.2	6.2	9.4	21.7	21.6	22.9
Liquidity end of year	4.3	8.9	11.2	6.2	9.4	21.7	21.6	22.9	29.2

Key figures

percent	2023 act.	2024e	2025e	2026e	2027e	2028e	2029e	2030e	2031e
Sales growth	16.8%	205.4%	417.8%	105.0%	69.7%	20.9%	-8.7%	19.1%	13.8%
EBITDA margin	-614.5%	-238.9%	27.0%	55.9%	69.3%	70.9%	64.1%	66.6%	67.9%
EBIT margin	-796.4%	-337.4%	-17.8%	26.4%	49.4%	51.1%	38.8%	42.9%	45.3%
EBT margin	-825.8%	-349.4%	-29.3%	17.2%	42.3%	44.7%	32.0%	37.1%	40.0%
Net margin (after minorities)	-829.3%	-350.6%	-29.5%	16.3%	40.1%	40.2%	21.3%	24.7%	26.7%

Annex IV: Sensitivity analysis

	Perpetual cash flows growth				
WACC	**2.0%**	**1.5%**	**1.0%**	**0.5%**	**0.0%**
5.2%	109.64	92.11	78.72	68.16	59.63
5.7%	88.01	75.10	64.92	56.69	49.90
6.2%	71.63	61.82	**58.98**	47.32	41.82
6.7%	58.84	51.18	44.86	39.55	35.03
7.2%	48.59	42.49	37.37	33.01	29.26

Disclaimer

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Charts
The charts were made with Tai-Pan (www.lp-software.de).

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II) Preparation and updating

The present financial analysis was prepared by: Dipl.-Kfm. Holger Steffen

Participants in the preparation of the present financial analysis: -

The present analysis was finished on 28.05.2024 at 6:15 pm and published on 29.05.2024 at 8:15 am.

For the preparation of its financial analyses, the sc-consult GmbH uses a five-tier rating scheme with regard to price expectation in the next twelve months. Additionally, estimation risk is quantified on a scale from 1 (low) to 6 (high). The ratings are as follows:

Strong Buy	We expect an increase in price for the analysed financial instrument by at least 10 percent. We assess the estimation risk as below average (1 to 2 points).
Buy	We expect an increase in price for the analysed financial instrument by at least 10 percent. We assess the estimation risk as average (3 to 4 points).
Speculative Buy	We expect an increase in price for the analysed financial instrument by at least 10 percent. We assess the estimation risk as above average (5 to 6 points).
Hold	We expect that the price of the analysed financial instrument will remain stable (between -10 and +10 percent). The forecast risk (1 to 6 points) has no further impact on the rating. The rating "hold" is also used in cases where we perceive a price potential of more

	than 10 percent, but explicitly mentioned temporary factors prevent a short-term realisation of the price potential.
Sell	We expect that the price of the analysed financial instrument will drop by at least 10 percent. The forecast risk (1 to 6 points) has no further impact on the rating.

The expected change in price refers to the current share price of the analysed company. This price and any other share prices used in this analysis are XETRA closing prices as of the last trading day before publication. If the share is not traded on XETRA, the closing price of another public stock exchange is used with a separate note to that effect.

The price targets published within the assessment are calculated with common methods of financial mathematics, especially with the DCF (discounted cash flow) method, the sum of the parts valuation and a peer group analysis. The valuation methods are affected by economic framework conditions, especially by the development of the interest rates.

The rating resulting from these methods reflects current expectations and can change anytime subject to company-specific or economic changes.

More detailed explanations of the models used by SMC Research can be found at:
http://www.smc-research.com/impressum/modellerlaeuterungen

An overview of the recommendations prepared and distributed by SMC Research in the last 12 months can be found at: http://www.smc-research.com/publikationsuebersicht

In the past 24 months, sc-consult GmbH has published the following financial analyses for the company:

Date	Investment recomm.	Target price	Conflict of interests
09.04.2024	Speculative Buy	59.50 Euro	1), 3), 4)
14.03.2024	Speculative Buy	62.40 Euro	1), 3), 4)
07.12.2023	Speculative Buy	64.40 Euro	1), 3)
26.09.2023	Speculative Buy	77.00 Euro	1), 3), 4)
27.06.2023	Speculative Buy	77.00 Euro	1), 3)
06.06.2023	Speculative Buy	77.00 Euro	1), 3)
05.04.2023	Speculative Buy	80.00 Euro	1), 3)
03.02.2023	Speculative Buy	80.00 Euro	1), 3)
05.10.2022	Speculative Buy	86.00 Euro	1), 3)
03.08.2022	Speculative Buy	86.00 Euro	1), 3)
27.06.2022	Speculative Buy	88.00 Euro	1), 3), 4)

In the course of the next twelve months, sc-consult GmbH will presumably prepare the following financial analyses for the company: one update and three comments.

The publishing dates for the financial analyses are not yet fixed at the present moment.

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