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Research report

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Pyrum Innovations AG

Realisation of further plants should now gain strong momentum

Rating: Speculative Buy (unchanged) | **Price:** 28.80 € | **Price target:** 55.00 € (prev.: 56.50 €)

Analyst: Dipl.-Kfm. Holger Steffen
sc-consult GmbH, Alter Steinweg 46, 48143 Münster

Phone: +49 (0) 251-13476-93
Telefax: +49 (0) 251-13476-92
E-Mail: kontakt@sc-consult.com
Internet: www.sc-consult.com

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In many years of development work, Pyrum Innovations AG has developed a patented thermolysis process for the recycling of scrap tyres, which can be used to recover oil, carbon black (rCB) and gas. The first industrial-scale plant was built in the middle of the last decade and, after several years of testing and optimisation, finally went into regular operation in May 2020. In the last two years, the plant has been expanded by two additional production lines, which are currently in an advanced ramp-up process. A second own plant with three production lines is to be built in Perl-Besch, Saarland, with construction due to start in the spring.

In addition, several other projects that Pyrum intends to realise with renowned partners – including Remondis, Unitank and SUEZ – are at an advanced stage of development. The projects in the Czech Republic and Greece, in which Pyrum will hold a minority stake, are the most advanced. The construction of the new plants forms the basis for the dynamic sales and profit growth expected in the coming years.

Basic data

Based in:	Dillingen / Saar
Sector:	Recycling
Headcount:	85
Accounting:	HGB
Ticker:	PYR:GR
ISIN:	DE000A2G8ZX8
Price:	28.80 Euro
Market segment:	Scale
Number of shares:	3.62 m
Market Cap:	104.3 m Euro
Enterprise Value:	123.9 m Euro
Free Float:	54.6 %
Price high/low (12 M):	50.00 / 23.00 Euro
Øturnover (12 M Xetra):	36,800 Euro

FY ends: 31.12.	2022	2023	2024e	2025e	2026e	2027e
Sales (m Euro)	1.0	1.1	2.0	6.0	14.3	39.3
EBIT (m Euro)	-7.6	-9.1	-10.3	-13.4	-13.5	0.5
Net profit	-7.8	-9.5	-11.6	-14.7	-15.8	-4.3
EpS	-2.40	-2.93	-2.66	-3.40	-3.65	-0.99
Dividend per share	0.00	0.00	0.00	0.00	0.00	0.00
Sales growth	6.5%	16.8%	77.9%	195.3%	137.9%	174.3%
Profit growth	-	-	-	-	-	-
PSR	106.17	90.93	51.10	17.30	7.27	2.65
PER	-	-	-	-	-	-
PCR	-	-	-	27.8	5.0	3.6
EV / EBIT	-	-	-	-	-	274.1
Dividend yield	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Executive Summary

- **Innovative recycling solution**: Pyrum has developed a new, patent-protected process for the thermolysis of used tyres that enables very efficient production of oil, rCB (recovered carbon black) and gas. Regular operation of the first production line started in May 2020. In the last two years, two further production lines have been set up, which are currently approaching full-load operation. Construction of the company's next plant, which will also have three production lines, is due to start in Perl-Besch in Saarland this spring.

- **Business model with two pillars**: The expansion of the company's own plant portfolio is intended to create the basis for increasing revenue from the marketing of the (re)extracted raw materials. As the running costs of the plant are low, this creates potential for high margins. In addition to this capital-intensive pillar of expansion, the company also intends to realise plants with third parties, for which it already has a pipeline of 20 projects, seven of which are at an advanced stage. The final investment decision for two projects – in Greece and the Czech Republic – could be made in the coming months. Pyrum is aiming for a minority stake here and in similar projects.

- **High demand**: The recycling of used tyres for the recovery of high-quality raw materials has so far only been carried out on a small scale, which is mainly due to the low efficiency of conventional processes. Pyrum's solution offers significant progress here, which is why the company is attracting a lot of interest. The addressed market is huge, with well over 1 billion used tyres weighing more than 30 million tonnes accumulating worldwide every year. So far, these are mainly used to produce rubber powder and granulates, which cannot be used for the production of new tyres. In addition, a high proportion of used tyres are still incinerated or landfilled. In Europe, however, the EU is pushing for the development of a circular economy and increasing the pressure on producers.

- **Revenue still low**: Although Pyrum's revenue increased by 29 percent to EUR 1.1 m in the first nine months of 2024, it is still at a low level. The still below-plan production of rCB pellets, which cannot be significantly ramped up until the completion of a new machine in mid-2025, personnel bottlenecks due to the simultaneous construction and operation of production lines, quality defects especially in peripheral components for the new lines and time-consuming optimisations during their ramp-up process have slowed the momentum somewhat. In September, the management therefore reduced its forecast for the full year 2024 to a revenue of EUR 1.9 to 2.4 m, albeit with a slightly lower EBIT loss (EUR -10 to -12 m) than previously expected.

- **High dynamics to be expected**: In the current year, revenue will increase considerably due to the expansion of production capacity at the headquarters, and we also expect strong growth thereafter thanks to the construction of new own plants and the realisation of numerous projects with partners, which should also be reflected in a significant improvement in margins. In our model, this leads to a fair value of EUR 55.00 per share, which signals a potential of more than 90 percent. On this basis, we confirm our “Speculative Buy” rating.

SWOT analysis

Strengths

- Patent-protected, innovative solution for scrap tyre recycling and the production of high-quality raw materials (thermolysis oil, rCB, gas).
- The first production line has been in regular operation since 2020; capacity was tripled in 2024 with the completion of two further lines.
- Strong focus on R&D and process engineering.
- Renowned partners: BASF, Continental and Ralf Bohle ("Schwalbe") are shareholders and close cooperation partners.
- The founder runs the company.
- Large pipeline of potential projects with well-known partners.

Weaknesses

- Experience with full-load operation of the new lines in the final design is still limited due to the short operating phase.
- Revenue has been low so far and was below plan in 2023 / nine months 2024, 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 expansion of the company's own plant in Dillingen will ensure increasing revenue with high margins in the current year.
- Some of the projects with third parties are well advanced. The first investment decisions could soon be made, from which Pyrum could generate considerable income.
- Due to the great need for efficient scrap tyre recycling, the demand could increase strongly after first successful projects.
- The situation on the sales markets addressed by Pyrum is currently very comfortable. Especially in the case of carbon black, the need for a sustainable supply from European sources is very great.
- 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.

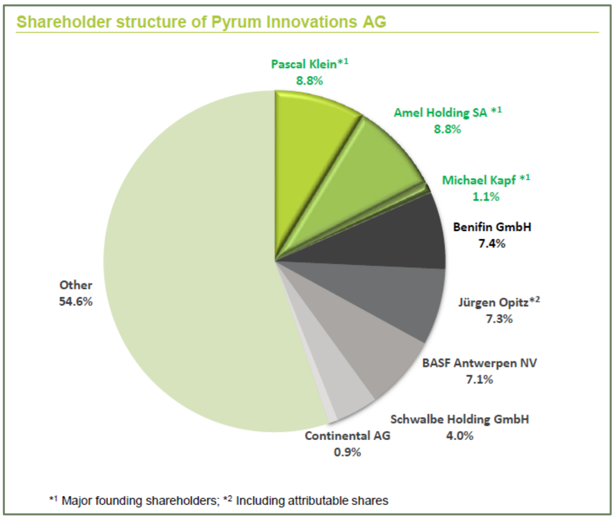
Threats

- The start of projects with third parties could be further delayed and postpone the break-even point.
- Financing for the major expansion plans has not yet been secured. Especially the 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 fall in raw material prices could reduce income (however, minimum prices have been agreed for the most important products).
- With advances in recycling, the raw material "used tyres" could become a scarce resource.
- Alternative recycling technologies could prove more efficient.

Profile

Innovative recycling specialist

Pyrum Innovations AG, based in Dillingen in the Saarland, emerged in 2017 from Pyrum Innovations ESC GmbH, which had already been founded in 2008. From the very beginning, the focus was on obtaining high-quality raw materials from used materials, especially tires and various plastics, using a new type of recycling concept. For this purpose, the company has developed a patent-protected process in which the crushed raw materials are broken down into oil, gas and coke in a multi-stage process with a thermolysis reactor as the core element. After years of preparatory work, the first industrial-scale plant, which is designed for the recycling of up to approx. 6,000 tonnes per year in terms of reactor capacity, started regular operation at the headquarters in 2020. This was followed by the construction of a second and third production line with a slightly higher capacity. By now, the transition of the new lines to full load operation has begun.



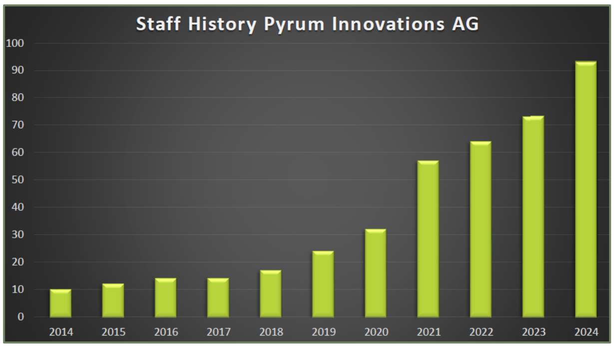
Source: Company

Large corporations involved

Following a private placement, the share was listed on the Euronext Growth market of the Oslo Stock Exchange in 2021, with a secondary listing in the Scale segment of Deutsche Börse in 2022. As part of the IPO and a further share issue, several large groups have invested in Pyrum. BASF currently holds 7.1 percent of the shares and 4.0 percent are held by the bicycle tyre manufacturer Ralf Bohle ("Schwalbe"), with Continental holding a further 0.9 percent. The founders Pascal Klein and Michael Kapf as well as Amel Holding S.A. (from Pascal Klein's family circle) also hold a substantial stake totalling 18.7 percent. The free float currently amounts to 54.6 percent.

Founder runs the company

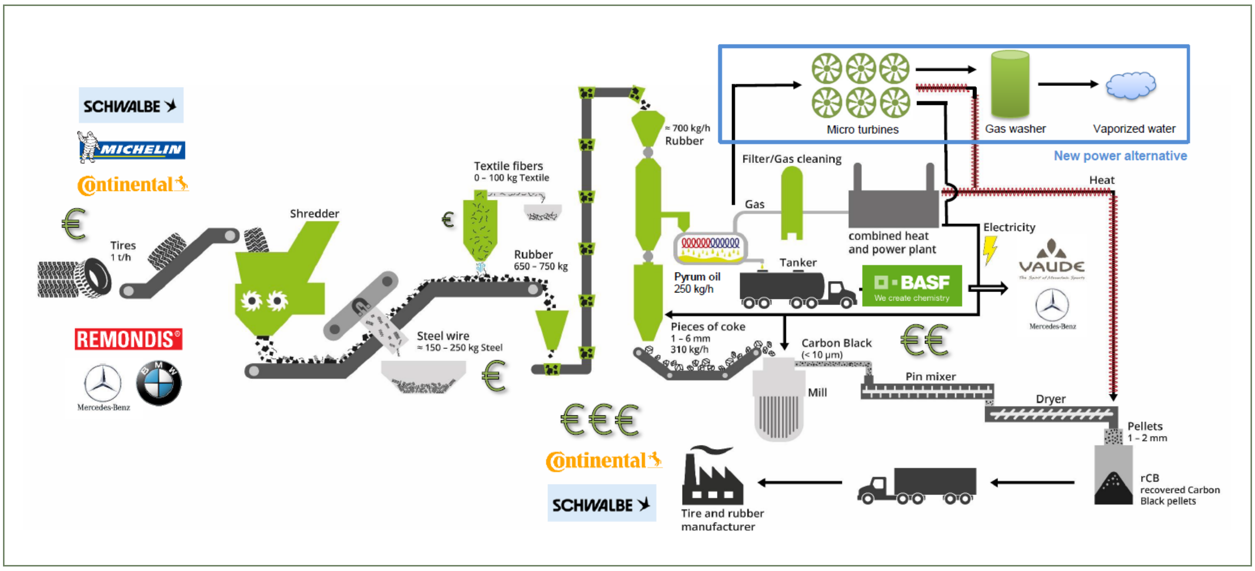
Pyrum is managed by a two-member Executive Board consisting of the founder Pascal Klein as CEO and Kai Winkelmann as CFO. Pascal Klein is the driving force behind the pyrolysis process, which Pyrum calls "thermolysis" because of the company's special solution and which the CEO and his team have been working hard to develop since 2008. Pyrum now has more than 90 employees, whose work is primarily focussed on plant operation and construction. In addition, process engineering and research and development are also important elements of the range of tasks.



Source: Company

New procedure

In the recycling process developed by Pyrum (see illustration at the top of the next page), which is designed in particular for processing car, truck and bicycle tyres (alternative materials include bitumen mats and insulation, door and window seals), the raw ma-



Schematic representation of the recycling plant; source: Company

terial is first shredded in order to separate out steel and textile components. The resulting rubber granules with a particle size of 1 to 12 mm are then fed into a vertical thermolysis reactor – the self-developed heart of the plant. It is a complex construction with 150 heat chambers and around 1,500 measuring probes, which allows the input material to be split into various raw materials – oil, gas and coke (see below) – in a closed high-temperature process (in the range of 650 to 700 degrees) with the exclusion of oxygen. The reactor has numerous special features that are the result of intensive development work. For one thing, the temperature in the plant is very homogeneous, which ensures consistently high product quality. In addition, the energy costs are so low due to an all-electric process that once thermolysis has been started by initial energy supply, the plant can continue to operate (i.e. is energy self-sufficient) by burning the gas obtained (in turbines or CHP units). And finally, the plant can now run for very long periods without interruption. The process only needs to be interrupted after several weeks for a burnout process lasting several days. A longer maintenance interval, which includes the complete shutdown of the reactor, is now only necessary two to three times a year.

Award-winning and patented

The innovative approach has already won many awards. In 2021, for example, the company won the tyre industry's Recircle Award in the “Best Tyre Recycling Innovation” category, and a year later it was named a “TOP 100 Innovator” in a prestigious competition for medium-sized companies. The core of the solution is protected by two patents: a European patent for the process, granted in 2009, and a worldwide patent for the reactor since 2011. Both patents have a term of 20 years and are held by the subsidiary Pyrum International Innovations S.A., based in Luxembourg.

Capacities significantly expanded

The process has now matured to such an extent that it is no longer significantly changed. Instead, Pyrum is now focussing on scaling capacity by building additional plants. As a first step, the construction of two new production lines began at the headquarters in Dillingen in November 2021. Although implementation was significantly delayed by the effects of the COVID pandemic and a phase of material shortages and sharp price increases in 2022/23, the lines – with the exception of the processing plants for the extracted coke (see below) – were completed by September 2023 and thus within 23 months (18 months had been planned). The ramp-up phase was then started, during which a few more optimisations were carried out. By the end of 2024, the operating time of lines two and three already amounted to more than 2 thousand and 1 thousand hours respectively and both lines are now heading towards full-load regular operation.

Details about Pyrum Unit 2 and 3

- **Start of building :** November 2021
- **Size of building site:** 8.000 m²
- **Production capacity:** up to 6 Tons of used tires per hour (10.000 tires per day)
- **Finished Parts of the Construction:**

– Buildings:	Finished since 11.2022
– Power, Water and Energy Supply:	Finished since 01.2023
– Control Room and Social Building:	Finished since 04.2023
– Shredding Plant for 6 to/hour:	Finished since 04.2023
– Construction of Thermolysis Unit 2+3:	Finished since 04.2023
– End product Storage:	Finished since 04.2023
– Cabling and controls Unit 2+3	Finished since 05.2023
– Power Plant (Gas to Energy):	Finished since 09.2023
– Cold ramp up:	Finished since 10.2023
– Start of warm ramp up:	Started in Nov. 2023
– New Mill and Pelletizer	2024 / 2025

- **Building time:** 23 months (Planned 18 months)
- **Delay:** 5 months (under the current supply chain conditions + COVID 19)

Source: Company

High-quality products

In full-load operation, the two new lines can each process just over 7,000 tonnes of used tyres per year. From every tonne of input material, Pyrum produces 150 to 250 kg of steel wire and up to 100 kg of textile fibres as by-products. However, the main products are thermolysis oil – with an output of 250 kg/tonne input – and coke, of which 310 kg per tonne is produced. In addition, a gas mixture is produced that can be used for the plant's own energy supply (via CHP units/turbines), so that the thermolysis is largely energy self-sufficient after the start. Both main products have now been certified several times: For example, the ISCC PLUS certification (International Sustainability & Carbon Certification) confirms the sustainability of production, while the oil is the first recycled product made from used tyres to receive REACH certification (Registration, Evaluation, Authorisation and Restriction of Chemicals) from the European Chemicals Agency and can therefore be used in the production process in the chemical industry.

Important purchase agreements

The extremely demanding certification of rCB production in accordance with automotive standards (VDA 6.3), which was achieved in 2023, was particularly important for Pyrum. This paved the way for the conclusion of a major purchase agreement with Continental, which represents a key milestone for further business development: the DAX-listed company has committed to purchasing the entire production of two plants for a period of ten years at an attractive price (between EUR 1,200 and 1,800 per tonne). In addition, there is the option of supplying the output from two further plants from 2028 onwards. So far, the production of rCB pellets is still below the original plan, as the production limit of the first pelletising machine installed for line one is 250 to 300 kg per hour for technical reasons. However, the construction of a much larger plant (with a capacity of 1,650 kg per hour) has already started and is due to be completed in the second quarter of this year, which will enable a significant ramp-up in production from the middle of the year. The thermolysis oil produced, on the other hand, can be sold without further processing. Pyrum has already concluded a long-term supply agreement with BASF for this product in 2019, which guarantees purchase at good conditions and provides for a gradual increase in the delivery volume to 100,000 tonnes p.a. (a plant with three lines produces around 4,500 tonnes). In order to achieve this goal, BASF is also supporting Pyrum's expansion with extensive loan commitments (see Financials section).

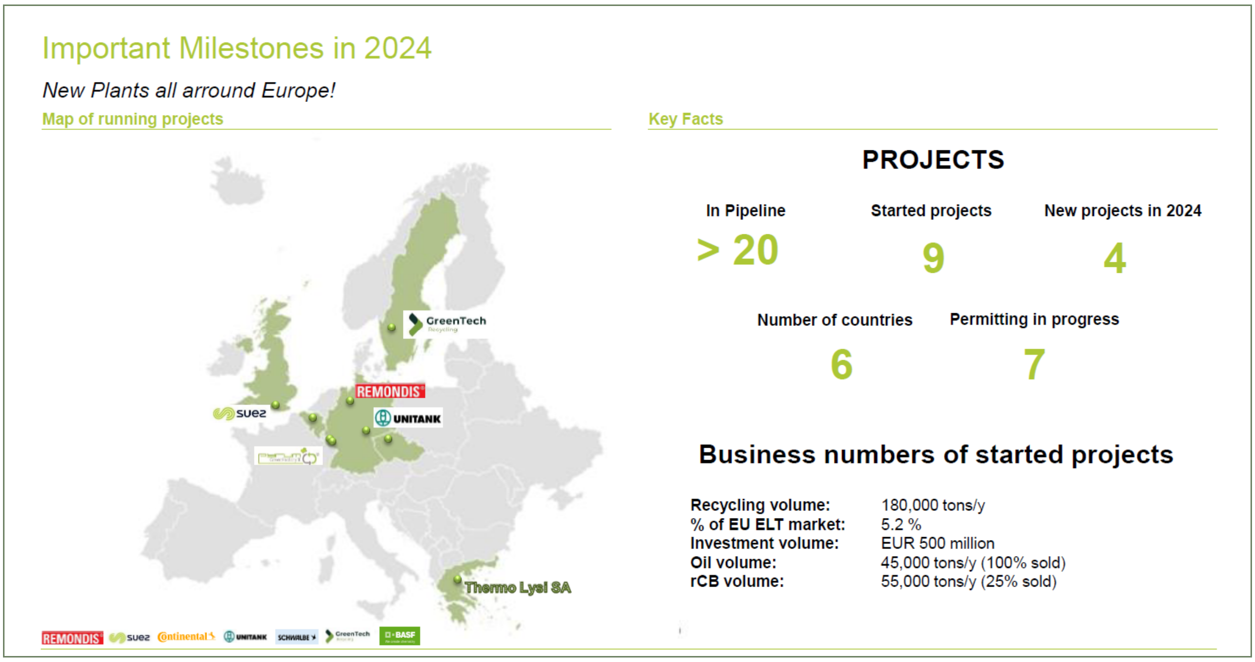
Strategy

Own plant portfolio

In a lengthy development process, Pyrum has set up a production plant for recycling tyres on an industrial scale, which produces high-quality raw materials – primarily oil, recovered carbon black and gas – from used tyres. As the technology is now mature and the development of a "standard" production line has been completed, the company can expand capacity by building new plants. The construction of two new lines at the headquarters has now been completed, meaning that a total of three lines are now in operation there, with the new lines currently running towards maximum output in continuous regular operation. At the same time, the company is already planning the next plant, which will be located in Perl-Besch in Saarland and will also consist of three lines. The necessary documents for approval of the "early start of construction" were already submitted at the end of last year, so that Pyrum expects construction to begin this spring.

Positioning as EPC

Due to the necessary initial investment, which currently amounts to around EUR 50 m per plant with a capacity of 22 thousand tonnes (input volume), the business model would be very capital-intensive if the company were to focus exclusively on building and operating its own plants. The second pillar of the strategy is therefore a worldwide sale of plants to third parties. For logistical reasons, Pyrum is initially focussing on the European market for the roll-out. The company acts as an EPC (engineering-procurement-construction) provider for the core elements of the plant, which include the thermolysis reactor, the cooling system, the power supply and the operating system. For the production of these components, the company itself has concluded contracts with several suppliers (in particular with Schäfer Metallbau GmbH and RBD Rohrleitungsbau GmbH). The other modules, which mainly include the shredder, the coke processing equipment and the pelletising machine, on the other hand, are supplied and installed directly by the respective manufacturers, for which



Project overview I; source: Company

Project status

	Project Nr.	Country	Partner/Site	General Terms Agreed /LOI	Contract / Pre-Engineering signed	Building site Secured / identified	Capital partly secured	Authorisation in process	Operative Company created	
100 %	1	Germany	Saarland	✓	✓	✓	✓	✓	✓	pyrum innovations
SPV	2	Greece	Athen „Thermo Lysi SA "	✓	✓	✓	✓	✓	✓	
SPV	3	Cech Republic	Sokolov	✓	✓	✓	✓	✓		
SPV	4	Germany	Bremen	✓	✓	✓	✓	✓		REMONDIS
EXT	5	UK	SUEZ UK	✓	✓	✓	✓	✓		suez
SPV	6	Germany	Revalit GmbH, Bayern	✓	✓		✓		✓	
SPV	7	Germany	Emleben	✓		✓	✓	✓		UNITANK
100 %	8	Germany	Hessen oder NRW	✓						pyrum innovations
SPV	9	...								
SPV	10	DE & Europe	Unitank 2-10	✓						UNITANK
SPV	11	Sweden	Billingsford	✓	✓	✓		✓	✓	GreenTech Recycling

Remarks: *(1) The list of projects represents a selection, not the complete project pipeline.*
(2) The order of the projects represents the currently planned realisation sequence. Changes over time are possible within the framework of the individual approval procedures.

Project overview II; source: Company

Pyrum receives a commission. Renowned providers have also been won as partners for this. For example, the shredders come from the Danish company EL-DAN Recycling, which is one of the world's leading suppliers of recycling machines, and the pelletising machine is supplied by the long-established machine manufacturer Hosokawa Alpine. If commissioned, the construction and start-up of a complete plant – from the pre-design to the ramp-up phase – takes about 24 months.

Investment income from SPVs

Pyrum has developed a special model for the sale of plants to third parties, which provides for a minority stake in the operating companies. To this end, project companies (special purpose vehicles (SPVs)) are to be founded together with the customers, in which Pyrum participates with a stake of 15 to 49 percent (depending on the equity contribution by the customer). To do this, the company only has to provide a disproportionately small amount of equity. Pyrum can thus generate continuous investment income from third-party investments – in addition to the income from the sale of the plants, which alone significantly exceeds the volume of invested capital. In principle, however, it is also conceivable and intended to sell plants without holding minority interests.

Large pipeline

The company has now built up a pipeline of more than 20 projects with partners from several European countries, seven of which are at an advanced stage (numbers 2 to 7 and 11 in the overview above – the green tick marks indicate progress in the last twelve months). The projects in Greece and the Czech Republic are particularly advanced. The Greek plant received planning permission at the beginning of January, and the final investment decision and the order for the plant components with the longest delivery times could follow in the second quarter. While Pyrum will hold a 15 percent share in the project company in Greece, an investment of EUR 7.6 m is planned for a 49 percent share in the Czech Republic. The final investment decision could also be made in the next few months. Several plants are also planned for Germany with partners such as the waste disposal company Remondis and the oil tank operator Unitank.

Pooling of revenue

The rapid expansion of capacity – through additional own plants and partner projects – offers potential for rapidly increasing production volumes. This, in turn, is the key prerequisite for being able to meet the needs of large industrial customers. These already include BASF, Continental and Schwalbe, and Pyrum has also been certified by other tyre manufacturers such as Hankook and Pirelli. They have a high demand for carbon black, which Pyrum will be able to cover at least in part in the future together with its partners. The agreements concluded with BASF and Continental provide a purchase guarantee for the raw materials produced for further new plants, which should facilitate their realisation.

Partnerships for the purchase of used tyres

With additional plants, the demand for input material, primarily used tyres, will also increase significantly. Pyrum is therefore already working on building up a network that will ensure a supply in sufficient quantities. Partners include large waste disposal companies such as Veolia and Remondis, as well as workshops that can get the label "Pyrum Green Workshops" by participating in the recycling system. The company has made particularly great progress in the collection of bicycle tires with its partner Ralf Bohle/Schwalbe. More than 1,800 bicycle dealers in Germany – around a third of the market – now take part in the collection system, meaning that Pyrum has already processed over 1 million bicycle tyres. For car tyres, on the other hand, one of the partners that collect and deliver the material is the Continental subsidiary REG (Reifen-Entsorgungsgesellschaft).

Strong focus on R&D

Continental has announced that it will switch its tyre production completely to a sustainable supply of raw materials by 2050. The Group therefore has a strong interest in high-quality rCB. This is reflected in a joint development project with Pyrum, as part of which the quality of the raw material is to be further improved, and the results of this process may even be protected. The project is an example of Pyrum's strong R&D focus, which is not only reflected in the development of the recycling process for used tyres. In the past, the company has also supported research projects in other areas that offer attractive business potential. This has resulted, for example, in the world's first plant that can fully recycle carbon fibre reinforced plastics (CFRP). It is still only a demonstration object with a capacity of one kilogramme of CFRP per hour, but the market is very interesting due to the major disposal problems with the carbon fibre-reinforced plastics used in many industries (such as for wind turbine rotor blades or vehicle components). The production of hydrogen is another high-potential field for Pyrum. Hydrogen is an essential (up to 40 percent) and actually undesirable (reducing the calorific value) component of the gas mixture produced with pyrolysis. With the help of suitable filter technology, it is in principle possible to separate it from the rest of the gas and store it. At the moment, however, there is still the question of the economic viability of the process. Furthermore, it is still unclear how the hydrogen obtained in the recycling process will be classified (green/turquoise/blue). If the intended increased use of hydrogen as an energy medium and storage medium improves the general conditions, the production of hydrogen could become an attractive option for Pyrum.

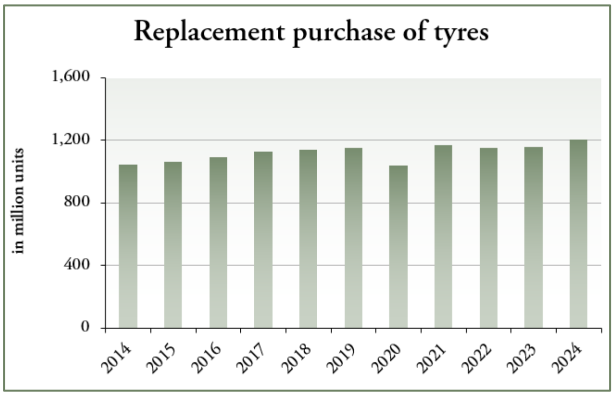
Market environment

Huge market

The most important raw material for Pyrum's recycling plants are currently scrap tyres, so we focus here on presenting the market environment for tyre processing and disposal. According to a survey by analysts at Smithers, the global tyre market recently had an annual volume of around 2.5 billion units, which are used for a wide range of vehicles – from bicycles, motorbikes and cars to commercial vehicles and aircraft (source: The Future of Global Tires to 2028). The world's largest manufacturer was the French group Michelin, closely followed by the Japanese company Bridgestone. The top five also includes the German automotive supplier Continental, as well as Goodyear from the USA and Pirelli from Italy (source: Tire Business, 39th Global Tire Report). All these companies work together in the Tire Industry Project (TIP), which is important for tyre recycling and was founded back in 2005 to improve the sustainability of the industry. Ten leading suppliers are currently represented in the TIP, accounting for almost two thirds of global production.

ELT volume with slight growth

The number of tyres reaching end-of-life (ELT) each year can be approximated from the volume of replacements for which a good database is available (however, this underestimates the number due to scrapped vehicles that no longer require replacement). Global tyre replacement demand in Pyrum's key sectors of automobiles, light commercial vehicles, trucks and buses shows a moderate growth trend. According to a survey by Michelin, the volume has increased by an average of 1.4 percent per year since 2014, to around 1.2 billion units in 2024 (source: Michelin/Statista). In the last period, however, the growth in replacement purchases was significantly disproportionately high at 4 percent according to Michelin, which is probably also due to the weakness of the new vehicle market (-2 percent) and the associated longer lifetimes. This was particularly pronounced in Europe, with an increase of 9 percent in replacement purchases and a decrease of 7 percent in new vehicle equipment (source: Michelin). The growing electric fleet is also a possible driver for higher growth in replacement purchases, as the tyres of electric vehicles have to be changed more frequently for several reasons (higher vehicle weight, more direct transmission of acceleration, softer compounds).



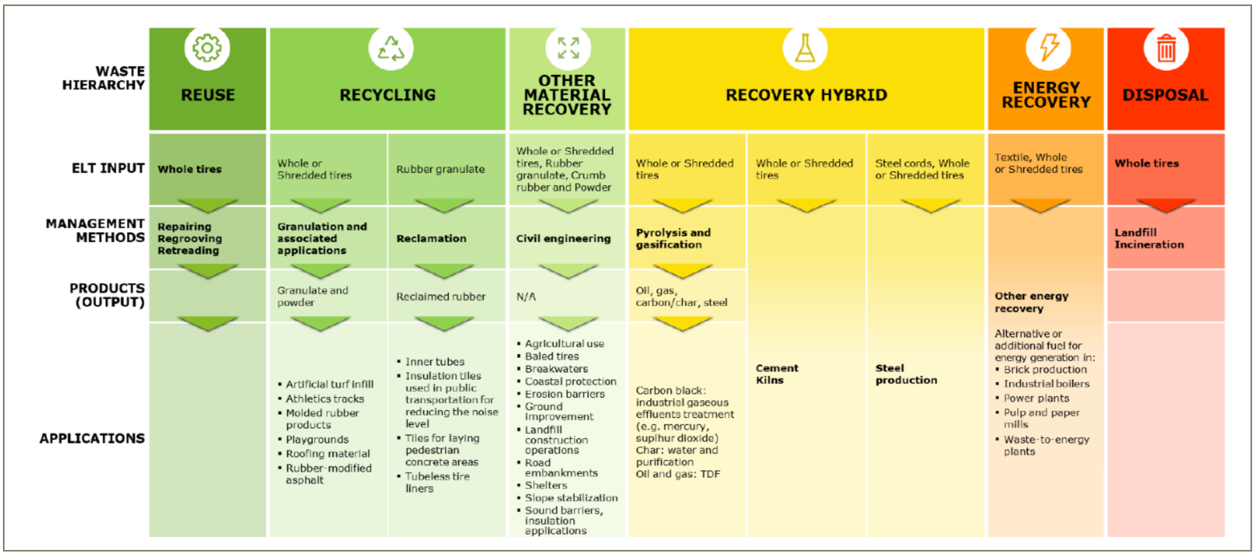
Source: Michelin/Statista

Many recycling routes

There are numerous different recycling options for used tyres (see figure at the top of the next page), but they differ greatly in terms of their sustainability. Landfilling or incineration of tyres is still widespread, but this does not make adequate use of the high-quality raw materials from which they are made. Thermal recycling, which is particularly widespread in the cement industry, is also seen as very critical from a climate point of view because of the high CO2 emissions. By now, however, there are a number of alternatives that make it possible to return the substances to the economic cycle. The most widespread is the further processing of shredded tyres into granulates or rubber powder. However, these are not high-quality materials and can therefore only be used to a very limited extent for the production of new tyres.

Innovative solutions

This problem is solved by innovative processes such as pyrolysis or devulcanisation, which produce raw ma-



Used tyre recycling at a glance; source: wbcsd (Global ELT Management 2019)

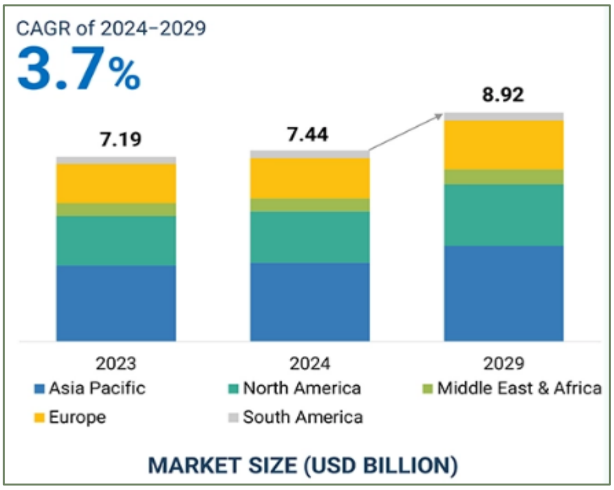
terials that are comparable to those commonly used in tyre production. Pyrolysis involves the decomposition of rubber granulate in a reactor or oven at high temperatures and in the absence of oxygen. In addition to gas, this process produces pyrolysis oil and industrial carbon black (rCB). In contrast, during devulcanisation, the crosslinking structures of the rubber are broken up again by adding energy, so that it is available again as a TDP (Tyre Derived Polymer) for vulcanisation as part of tyre production. However, this process is not yet mature enough to play a major role in the market and is currently being researched further. Pyrolysis is already much further along in this respect and, of all the alternatives for recycling used tyres, offers the best opportunity to recover high-quality raw materials, which ensures a high market potential. At the same time, however, the process is very demanding. Critical factors that influence the usability of the raw materials produced are the stability of the process, the control over the temperatures in the reactor and the homogeneity of the output.

Traditional methods still dominating

Pyrolysis still accounts for only a small proportion of the global recycling of used tyres; Pyrum puts it at a low single-digit percentage. The most widespread process, with a share of about 75 percent, is the production of granulates, rubber powder and steel wire (from the metal components of the tyres). In addition, used tyres are also used as building material or in the production of cement clinker. Accordingly, the largest providers in the global market for used tyre recycling are in the classic recycling sector, i.e. the production of granulates and rubber powder. The analysts at MarketsandMarkets count the US group Liberty Tire Recycling, the Danish company GENAN, the Australian company ResourceCo and GRP from India among the leading players (source: MarketsandMarkets – Tire Recycling Market). The operating radius of the groups is mostly limited to a few countries, so the industry as a whole is still very fragmented internationally.

Politics as a market driver

MarketsandMarkets puts the volume of the global tyre recycling market at USD 7.4 billion. The analysts anticipate average growth of 3.7 percent p.a. to USD 8.9 billion by 2029. The most important drivers are the growth of the global vehicle market, the sustainability efforts of the industry and ever stricter regulation. At the European level, the landfilling of tyres has already been banned and the Waste Framework Directive is gradually raising standards for the recycling of waste. Some countries (especially in Scandinavia) have already gone ahead and completely banned the thermal recycling of used tyres, and tyre granulate may no longer be used for outdoor facilities (playgrounds or sports fields). Additional pressure is being exerted by the rising prices for CO2 emissions, which are also a result of the systematic shortage of emission allowances in the European emissions certificate system.



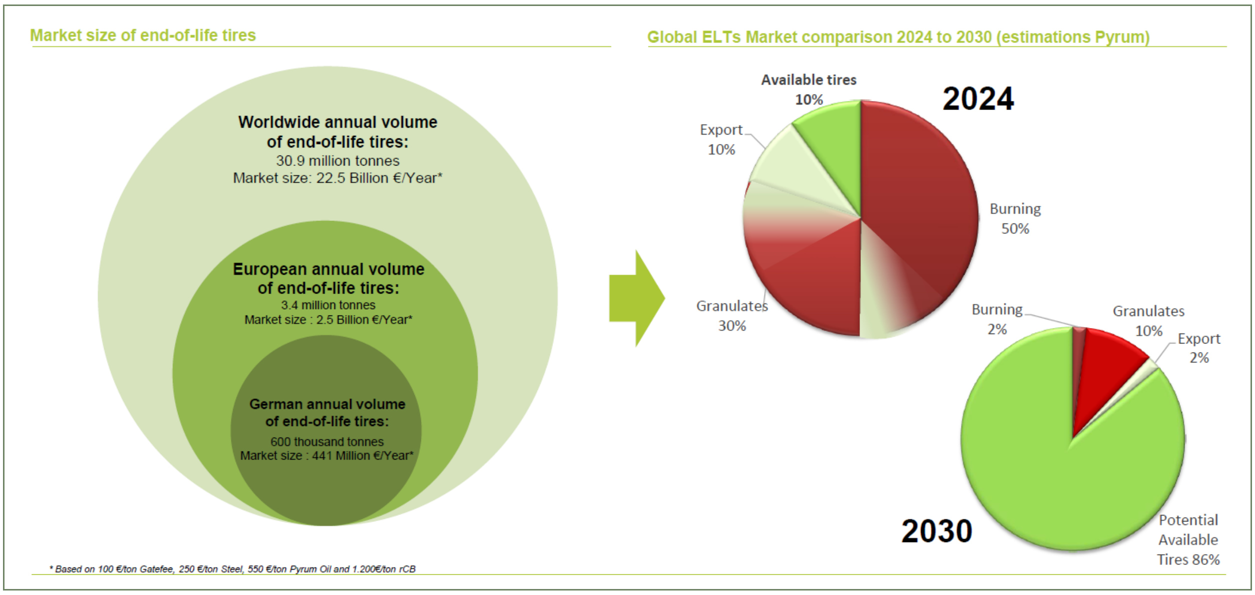
Source: MarketsandMarkets

Ambitious goals

As part of "Extended Producer Responsibility", manufacturers in the EU are also increasingly being called upon to improve the recycling rate for their products. This is one of the reasons why companies in the tyre industry have recently formulated ambitious targets in this regard. The manufacturer of Schwalbe tyres, for example, is planning a 70 percent share of rCB in its products and Continental has formulated the intention to manufacture its tyres entirely from sustainably produced raw materials by 2050 at the latest.

Technologically leading solution

The analysts at MarketsandMarkets cite a uniform quality and consistency of recycling output as the main difficulty in the recycling market. The input material is heterogeneous and often contaminated in various ways, which makes it much more difficult to process into high-quality products. Innovative processes such as devulcanisation and pyrolysis are also very complex. With its thermolysis solution (as a variant of pyrolysis), Pyrum sees itself in a technically leading position. The company has now received the most important certifications for its core products, confirming that the output meets the high-quality requirements of tyre manufacturers and chemical companies. Compared to other companies in the sector, Pyrum also sees the very long uninterrupted plant runtimes and the relatively low manpower requirements in operation as key advantages. Together with the energy self-sufficiency of the process once thermolysis has been started, these ensure lower operating costs and efficiency advantages of the Pyrum process. The narrower circle of competitors in the European market includes Enviro from Sweden, Contec from Poland and New Energy from Hungary, all of which rely on pyrolysis.



Source: Company

Strong structural shift expected

However, the market definitely offers potential for several innovative providers, especially as it is highly likely that the new solutions, in conjunction with the tightening of political regulation and the industry's sustainability endeavours, will cause a major structural shift. Pyrum estimates that the volume of tyres available for advanced recycling methods will increase to 86 percent of the total market by 2030 – up from just 10 percent last year (see figure on the bottom of the previous page). In particular, the international trade in used tyres is likely to be increasingly restricted in future. Currently, large amounts are exported to countries such as Morocco, Turkey, Pakistan, India or South Korea, where the tyres are presumably at least largely burned.

Financials

Revenue still low

Pyrum's last few financial years were still shaped by low revenue. On the one hand, the first production line is not yet as efficient as the new ones and, on the other, the first milling and pelletising plant for the production of rCB pellets has fallen well short of the targeted capacity – by more than half – because the production process is still sub-optimal. However, this bottleneck will be eliminated with the installation of the considerably larger new milling and pelletising plant, which has already started and is scheduled for completion in the second quarter.

Capitalisations play a major role

In the 2023 financial year (the annual figures for 2024 have not yet been published), revenue amounted to only EUR 1.15 m, 17 percent more than in 2022, while total output was many times higher at EUR 12.8 m, mainly due to own work capitalised (EUR 11.7 m) for the construction of the new production lines.

Business figures	9M 23	9M 24	Change
Revenue	0.84	1.09	*+29%*
Total output	10.72	7.65	*-29%*
EBITDA	-4.98	-5.45	-
EBIT	-6.58	-7.13	-
Net profit	-6.69	-7.98	-

In m Euro and percent; source: Company

High start-up losses

However, the expansion of the production lines is also reflected in the cost of materials, which amounted to EUR 11.4 m in 2023. This generated a gross profit of EUR 1.4 m in that year, which is nowhere near enough to cover the structural costs. As a result, EBIT was negative at EUR -9.2 m, as was the net result at EUR -9.5 m. The operating loss and the high level of investment activities also led to a high free cash flow deficit, which totalled EUR -17.9 m in the financial period. 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.

Still inhibiting effects in 2024

In the first nine months of last year, this picture has not yet changed substantially, although revenue is now picking up somewhat more strongly. At the end of September, revenue totalled EUR 1.1 m, up 29 percent on the previous year. This did not yet include services under consulting contracts for customer plants that have been partly paid for and provided but may only be invoiced with an effect on revenue once the plants have been approved (which was not yet the case). In addition, several other aspects had an inhibiting effect on revenue development. These include insufficient pellet production and too scarce personnel capacity to manage the operation of line one and the ramp-up process of lines two and three simultaneously – which is why production at the older plant was temporarily interrupted. Further interruptions resulted from necessary optimisation work on the new lines due to minor problems such as foaming in the oil tanks and crystal formation in the gas pipes. Pyrum also had to complain about some plant components (including gas filters) that did not fulfil the quality requirements. According to Pyrum, the latter problem is a consequence of the disruption to supply chains since the COVID-19 pandemic and the war in Ukraine. By now, the company has built up a spare parts warehouse and increased its workforce.

Nine-month deficit slightly increased

Due to the work on the new lines and the next new plant, total output in the first nine months of 2024 was once again significantly higher than revenue at EUR 7.7 m but was below the previous year's level (EUR 10.7 m) due to the progressing completion of the two production lines at the headquarters. With the lower own work capitalised (EUR 6.2 m, -37 percent compared to the previous year), the cost of materials also fell from EUR 9.6 m to EUR 6.4 m. Personnel costs, on the other hand, were 27 percent higher than in the previous year at EUR 4.8 m due to the increased number of employees. In combination with the almost unchanged other operating expenses (EUR 2.7 m), higher other operating income (from EUR 0.5 m to EUR 0.9 m) and a slight increase in depreciation and amortisation (from EUR 1.6 m to EUR 1.7 m), this resulted in a slightly higher EBIT loss than in the previous year (EUR -7.1 m, last year EUR -6.6 m). The net result also reflected the higher interest expenses (from EUR 0.3 m to EUR 0.9 m) due to the increase in external financing, with the result that the nine-month deficit rose from EUR -6.9 m to EUR -8.0 m.

Liquidity strengthened with capital increase

The cash flow figures for the first nine months of 2024 reflect the temporary reduction in investment activities due to the advanced stage of completion of the new lines. While the cash outflow from operating activities remained almost unchanged at EUR -4.2 m (previous year: EUR -4.4 m), the investment cash flow fell from EUR -10.0 m in the previous year to EUR -6.9 m, meaning that the free cash flow deficit fell from EUR -14.3 m to EUR -11.1 m. As the financing cash flow was higher with a net cash inflow of EUR 12.9 m, primarily due to extensive drawdowns from an additional loan granted by BASF in 2023, liquidity increased from EUR 4.5 m to EUR 6.3 m between the beginning of the year and the end of September 2024. After the quarterly reporting date, it improved significantly once again, as the company placed 363,600 shares at a price of EUR 27.50 per share in the course of a capital increase in October, raising gross proceeds of around EUR 10 m.

Fixed asset investments shape balance sheet

This will also have a correspondingly positive effect on equity, which had fallen from EUR 22.4 m to EUR 14.4 m in the first nine months due to the loss for the period, reducing the equity ratio from 43.9 percent to 24.9 percent. Liabilities to banks and other liabilities, which largely consist of BASF loans, amounted to just under EUR 36 m or around 62 percent of the balance sheet total as at the reporting date. On the assets side, this is primarily offset by property, plant and equipment, which accounted for EUR 44.9 m or 78 percent of the balance sheet total at the end of September.

Forecast revised in September

As production in the first nine months of 2024 was still affected by delays that could not be made up by the end of the year, the company had to revise its annual forecast last September. The outlook for product sales was reduced from between EUR 2.5 and 3.5 m to between EUR 1.7 and 2.0 m and the target for income from consulting contracts (here, too, there were delays in SPV projects over the course of the year) was lowered from EUR 0.5 m to a range of EUR 0.2 to 0.5 m. The development of the new plant in Perl-Besch was also slightly behind schedule, which is why the forecast figure for total output in 2024 has also been reduced, with the impact here – EUR 10 m instead of EUR 25 to 30 m – being very significant. However, costs developed somewhat better than expected, which is why the target range for the EBIT loss was reduced from between EUR -11 and -13 m to between EUR -10 and -12 m despite the lower revenue.

Further financing measures

In order to be able to advance several projects at the same time, Pyrum still has additional financing needs even after the recent capital increase. A loan agreement was concluded with BASF for this purpose in 2023, the first half of which (EUR 25 m) has already been drawn down to a large extent. For the second half, Pyrum must raise a further EUR 50 m elsewhere as a precondition. This can be equity capital, debt capital for the company or project financing (from partners or banks for SPV projects). The capital increase will be credited towards this amount accordingly. The company is currently working intensively on further measures to secure the required capital quickly. These include, in particular, possible bank financing of EUR 70 to 100 m for new plants, which was presented at last year's Annual General Meeting and is currently still at the negotiation stage. Sale-and-lease-back agreements for plants or direct investments by infrastructure funds in project companies are also being considered as alternatives.

Equity story

Great innovation

Currently, well over 1 billion tyres worldwide reach the end of their service life every year. Their recycling is in itself attractive because of the high-quality raw materials they contain, but at the same time it is technically complicated and costly. Therefore, no process has yet become established in the broad market, so that the majority of tyres are still landfilled, incinerated or shredded. However, after years of development work, Pyrum has now worked out a stable process that allows the very economical recovery of the key raw materials oil and carbon black. For the industry, this represents a major innovation that offers correspondingly high potential.

Future sales already secured

It is therefore not surprising that numerous tyre industry giants have taken notice of the company. Pyrum has already been certified by several major tyre manufacturers who want to purchase the rCB, and the supply contract concluded with Continental represents the most important milestone. The contract guarantees the purchase of the entire rCB output from two plants for a period of ten years at an attractive price – with the option of doubling the delivery volume again from 2028. This means that sales can now be planned extremely well, as BASF has already been won as a customer for the second main product. The chemicals group has confirmed its requirements for up to 100,000 tonnes of oil per year, which corresponds to the output from more than 20 Pyrum plants.

Strategic interest of customers

BASF's strong interest in this product is also underlined by the strong financial commitment of the DAX-listed company, which is supporting Pyrum with extensive loan agreements in the high double-digit million range. This is also due to the fact that greater resource efficiency and improved sustainability are strong trends in the industry. The pressure to adapt results, on the one hand, from rising commodity prices and, on the other hand, from increasingly stringent political requirements and the corresponding expectations of society and investors (keyword: ESG investments).

Significant capacity expansion

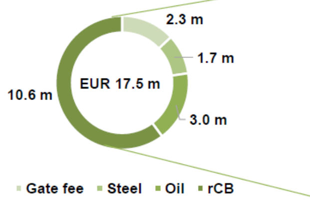
In view of the contractually agreed high sales potential, Pyrum's main task now is to expand production capacity quickly and significantly. The construction of production lines two and three at the headquarters in the last two years was the first step, and others are now to follow quickly. While the realisation of the next own plant in Perl-Besch is scheduled to start this spring, the final investment decisions for the partner projects in Greece and the Czech Republic will be made in the coming months. If this process is successfully completed, it would be a very positive signal for the development of further projects. The company has already built up an extensive pipeline of over 20 projects, seven of which are at an advanced stage. It is conceivable that the processes here will be accelerated when the first partner plants go into construction. From 2027, the company plans to launch one project per quarter (own or with third parties).

Potential for high yield increases

As sales of the products manufactured are already very well secured, the profitability of a standard plant with three production lines can be calculated fairly well. The company currently anticipates revenue totalling EUR 17.5 m, resulting in EBITDA of EUR 10 m after deducting operating costs (see figure below). The expansion of the own capacities therefore offers great potential for significant increases in earnings.

Estimated plant economics – operating at 22,000 tonnes p.a. capacity

1 **Total revenues**



	EUR/t	tons
Gate fee	100/ton	22,700 t
Steel	300/ton	5,675 t
Oil	650/ton	4,563 t
rCB	1,500/ton	7,072 t
Gas	used	
Heat/Energy	used	

	Direct costs	EUR ~ 2.6 m
2	OPEX	EUR ~ 4.9 m
3	EBITDA	EUR ~ 10.0 m
4	Investment	EUR ~ 50 m
4 / 3	Payback EBITDA basis	~ 5.0 years

Source: Company

Attractive lever

The construction of a plant with a capacity of 22 thousand tonnes currently requires investments of around EUR 50 m. Focusing solely on building the company's own capacities would therefore be associated with high capital intensity. The company has therefore set up the business model in two tracks, with the sale of equipment to third parties as a second pillar. Pyrum initially generates income from these projects from consulting contracts and then, if realised, supplies the core components of the plant. The company is also aiming for a stake of between 15 and 49 percent in plants that are implemented for partners in Europe. This offers an attractive way for Pyrum to leverage profit development through additional investment income. The plants that are built for third parties also offer further revenue potential, for example through operating and maintenance contracts or the bundled marketing of the raw materials produced with them.

The last big step

The last major step still to be taken is to secure funding for the next own plants and partner projects. BASF's commitment to provide a further EUR 25 m once Pyrum itself has raised EUR 50 m – of which EUR 10 m has already been achieved in the capital increase carried out last year – represents an important support. If the company now succeeds in obtaining major bank financing for its next own plants, the conditions would be met. But the hurdle can also be overcome with an investment commitment from partners. If the financing for the next plants is secured and construction starts, this would be the final breakthrough for the business model, which could also trigger a revaluation of the share.

Further potential

The technological potential of the Pyrum solution has not yet been exhausted with the current design of the plant. Especially the production of hydrogen is possible with the installation of a filter system and potentially – depending on the development of the general conditions (e.g. hydrogen demand and hydrogen prices) – also economical. Furthermore, an application of the technology is also conceivable in other areas. In recent years, the company, whose focus has been strongly oriented towards research and development since its foundation, has once again intensified its efforts to open up additional fields of activity. The recycling of carbon fibre composite materials in particular also appears promising, and a pilot plant for this area is already in operation.

DCF valuation

Revenue likely to increase significantly

So far, Pyrum has only generated small revenue, but that should now change. The expansion of the plant at the headquarters triples the amount of recyclable material and thus also the output. In addition, a milling and pelletising machine is currently being installed, which is expected to enable a significant increase in the production volume of rCB pellets from the middle of the year. The rCB business is of enormous importance, as it generates slightly more than 60 percent of a plant's revenue according to plan. Production at the new plant is expected to be ramped up gradually from July this year, so that it should reach 80 percent of maximum capacity by the end of the year. Overall, we assume that Pyrum will be able to generate EUR 5.5 m from product sales in the current year – we have thus modelled the ramp-up processes somewhat more cautiously than before (with revenue of EUR 6.6 m) – and an unchanged EUR 0.5 m from consulting contracts, meaning that total revenue will amount to EUR 6.0 m. On this basis, we estimate EBIT at EUR -13.4 m.

Model adjustment

So far, we had assumed total sales of EUR 12.9 m and EBIT of EUR -6.5 m for 2025. The difference to the new estimates is primarily due to a recent model change, as the revenue and cash flows are expected to be somewhat different than we had previously assumed. We had assumed that plant component sales would be made in stages during project realisation with third parties and recognised as revenue, but this is not currently the case. Instead, deliveries are only recognised as revenue en bloc when the plants are accepted by the customer. This is expected to be the case for the SPV projects for the first time in 2027. We have therefore postponed the revenue from plant sales with third parties in our model accordingly – we had previously assumed EUR 6.3 m for 2025 and EUR 24.3 m for the subsequent period. Now the series starts in 2027 with EUR 19 m, but from 2029 it will be above the old curve. However, the adjustment has no negative impact on the model result, because in return we took into account larger advance payments from the partners, which are due at the beginning with each final investment decision. As these are initially larger than the component sales we expect for Pyrum, which only represent a part of the total project volume, the impact of the adjustment on operating cash flow in the first model years is positive.

Dynamic expansion

Our expansion model for the number of SPVs and own plants remains unchanged. We continue to assume that Pyrum will expand its own portfolio by one plant per year from 2026. The number of partner projects for which the initial consulting process has been completed or is being started should increase by five in the current year and by a further three in the com-

Revenue model (m Euro)	2024	2025	2026	2027	2028	2029	2030	2031
Revenue plant Dillingen	1.7	5.5	13.3	13.3	13.3	13.3	13.3	13.3
Further own plants (total number)			*1*	*2*	*3*	*4*	*5*	*6*
Revenue further plants				5.5	23.5	42.4	62.8	82.4
SPVs (total number)	*2*	*5*	*8*	*11*	*13*	*15*	*17*	*19*
Revenue sale of plants /Consulting	0.3	0.5	1.0	19.0	19.0	19.0	13.0	13.0
Other revenue SPVs (maintenance etc.)			0.0	1.5	2.4	3.3	3.9	4.5
Plants without SPV (total number)				*1*	*2*	*3*	*4*	*5*
Revenue plants without SPV					6.0	6.0	6.0	6.0
Total revenue	**2.0**	**6.0**	**14.3**	**39.3**	**64.3**	**84.0**	**99.0**	**119.2**

Estimates SMC-Research

ing period. After a two-year construction period, the plants start the ramp-up phase. From 2028, we are reducing the number of new SPV projects from three to two per year, but at the same time we are also assuming (from 2027) the sale of one plant per year in which Pyrum does not hold a stake. This means that a total of four plants per year will be in the realisation process from 2028, which is in line with the company's goal of launching a project every quarter from 2027.

Potentially high margin

We have calculated the income from production with a safety margin of 10 percent on the company's price assumptions. As a result, revenue from own plants in the detailed forecast period will initially rise to EUR 13.3 m in the next financial period and to EUR 95.7 m in 2031. In the same period, revenue from the sale of plants, consulting contracts and maintenance will increase from EUR 1.0 m in 2026 (consulting only) to EUR 23.5 m. We therefore expect revenue to total EUR 119.2 m at the end of the detailed forecast period. The strong sales growth will be accompanied by a substantial improvement in margins. One reason for this is that the plants are expected to operate very profitably at full capacity, which leads to high income from the company's own plant fleet and substantial investment income. On the other hand, the company generates high-margin revenue from the sale of plant components. As it is still unclear to what extent these will be recognised in full in Pyrum's income statement (as revenue and cost of materials), we have only included the potential net revenue. This seems to drive up the EBIT margin significantly, which we estimate at 44.2 percent at the end of the detailed forecast period using this approach. In fact, revenue and costs are likely to be higher and the margin lower, but this will have no impact on the absolute level of EBIT if Pyrum's sales margin reaches our estimates.

High investments

Although, according to our assumptions, the operating cash flow will already be positive in 2025 – thanks to prepayments – and will rise sharply thereafter due to high-margin production and income from the sale of plants, the free cash flow in our model is negative until 2030, which is due to the high investments in new plants and SPVs. Subsequently, in the steady state, however, Pyrum achieves a very high free cash flow. The table at the bottom of this page shows the development of the key cash flow figures resulting from our assumptions in the detailed forecast period up to 2031; further details on the balance sheet, in-

m Euro	12 2024	12 2025	12 2026	12 2027	12 2028	12 2029	12 2030	12 2031
Sales	2.0	6.0	14.3	39.3	64.3	84.0	99.0	119,2
Sales growth		195.3%	137.9%	174.3%	63.4%	30.7%	17.9%	20,4%
EBIT margin	-502.9%	-221.8%	-94.2%	1.1%	27.5%	36.1%	39.0%	44,2%
EBIT	**-10.3**	**-13.4**	**-13.5**	**0.5**	**17.7**	**30.3**	**38.7**	**52,7**
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	-0.7	0.0	1.8	10.0	12.8	17,4
NOPAT	**-10.3**	**-13.4**	**-12.8**	**0.4**	**15.9**	**20.3**	**25.9**	**35,3**
+ Depreciation & Amortisation	2.4	4.9	9.3	16.4	20.8	25.2	29.6	34,0
+ 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	-7.7	-8.2	-3.2	17.1	37.0	45.8	55.9	69,8
- Increase Net Working Capital	1.1	12.0	24.0	11.3	-1.3	-13.8	-14.1	-2,4
- Investments in fixed assets	-8.9	-44.1	-62.1	-62.1	-60.1	-52.1	-52.1	-52,1
Free cash flow	**-15.4**	**-40.3**	**-41.3**	**-33.7**	**-24.3**	**-20.0**	**-10.3**	**15,3**

Estimates SMC-Research

come statement and cash flow can be found in the Annex.

Financing assumptions

Due to the negative FCF, which will initially remain so for some time, there is a considerable need for financing to realise the expansion. We have already assumed that Pyrum will implement a further capital increase in the current year and place just under 10 percent of new shares, and we are sticking to this assumption. We are also calculating with another 10 percent increase for 2026. We assume that the company will cover any additional requirements with borrowed capital. We therefore now expect the fully diluted number of shares to be 4.3 million (previously: 3.9 million).

Discount rate 6.1 percent

We discount the free cash flow resulting from the estimates with the WACC (Weighted Average Cost of Capital), applying an interest rate on borrowed capital of 5,5 percent (this is even rather high due to the favourable partial refinancing via BASF). We calculate the cost of equity using the CAPM (Capital Asset Pricing Model*)*, with a safe interest rate of 2.5 percent (derived from the German current yield) and 5.6 percent as the market risk premium for Germany (updated, previous value was 5.8 percent; source: Survey – Market Risk Premium and Risk-Free Rate used for 96 countries in 2024). We derive the beta factor fundamentally and assess the value for a technology company, where the roll-out is still at a relatively early stage, at 1.3. This results in equity cost of 9.8 percent. Together with a target equity ratio of 40 percent and a tax rate for the tax shield of 33 percent, this results in a WACC of 6.1percent.

Terminal Value

To determine the terminal value, we apply a safety margin of 15 percent to the target EBIT margin and subsequently assume a “perpetual” cash flow growth rate of 1.0 percent p.a.

Price target EUR 55.00 per share

In our favourite scenario (perpetual growth 1.0 percent, WACC 6.1 percent), these assumptions add up to a market value of equity of EUR 237,8 m. Converted to the hypothetical diluted number of shares of 4.3 million, this results in a value of EUR 54.80 per share, from which we derive a target price of EUR 55.00 (a sensitivity analysis for determining the target price can be found in the Annex). The slight reduction compared to our previous valuation (EUR 56.50) is the result of the model change (taking into account early prepayments and later revenue from SPV projects) and the slightly higher assumed dilution, although the dampening effect on the fair value was partially offset by the slight reduction in the discount rate (lower market risk premium). On a scale of 1 (very low) to 6 (very high), we 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

Pyrum has undergone a challenging process to build two new production lines and triple its capacity in a difficult environment affected at times by high price increases and material shortages. Despite this, the project was a success with manageable delays of a few months. After a few optimisations were also carried out, the plant is now running at full load in regular operation.

This paves the way for a further significant expansion of capacity. Construction of the company's next plant in Perl-Besch is scheduled to start this spring. The final investment decision for the partner projects in the Czech Republic and Greece could also be made in the coming months.

In total, the company has now built up a pipeline of over 20 plants (each with three production lines), including seven projects with partners at an advanced stage. This lays the foundation for rapid expansion in the coming years with strong sales growth, which in turn should enable a very significant improvement in margins.

The key to realising these plans is extensive financing measures. The company is working intensively on acquiring the necessary funds, currently favouring large-scale bank financing for its own plants. It could also receive investment commitments from the first partners in the coming months.

This would clear the way for several construction projects. We then expect a revaluation of the share, which has suffered greatly from the delays of the last two years. Based on the great opportunities for expansion, we currently see the fair value at EUR 55.00 and thus well above the current share price, which continues to justify the “Speculative Buy” rating.

Annex I: 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	51.6	90.7	143.4	189.1	228.4	255.2	277.7	295.8
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	46.6	74.3	115.7	150.0	173.9	193.5	208.6	219.3
II. Total current assets	5.7	14.7	27.1	36.2	40.2	42.3	39.3	35.8	48.0
LIABILITIES									
I. Equity	22.4	22.2	18.2	14.4	10.1	19.9	34.7	54.4	83.0
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	32.0	85.5	148.8	199.5	228.7	236.0	233.6	233.6
2. Short-term liabilities	7.3	9.0	10.7	12.8	15.8	17.9	19.3	20.5	21.7
TOTAL	**50.9**	**66.6**	**118.0**	**179.9**	**229.6**	**270.9**	**294.8**	**313.8**	**344.1**

P&L estimation

m Euro	2023 act.	2024e	2025e	2026e	2027e	2028e	2029e	2030e	2031e
Sales	1.1	2.0	6.0	14.3	39.3	64.3	84.0	99.0	119.2
Cost of sales	12.8	10.2	19.2	49.5	74.5	99.5	119.2	134.2	154.4
Gross profit	1.4	1.3	3.4	9.1	31.5	53.9	71.0	83.4	101.0
EBITDA	-7.0	-7.9	-8.4	-4.2	16.8	37.9	53.8	65.0	81.6
EBIT	-9.1	-10.3	-13.4	-13.5	0.5	17.7	30.3	38.7	52.7
EBT	-9.5	-11.5	-14.7	-16.6	-4.5	10.9	22.2	29.5	42.9
EAT (before minorities)	-9.5	-11.6	-14.7	-15.8	-4.3	9.8	14.8	19.7	28.6
EAT	-9.5	-11.6	-14.7	-15.8	-4.3	9.8	14.8	19.7	28.6
EPS	-2.93	-2.66	-3.40	-3.65	-0.99	2.25	3.42	4.53	6.60

Annex II: 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	-6.6	3.7	21.0	28.9	36.8	35.3	45.3	71.0
CF from investments	-11.7	-8.9	-44.1	-62.1	-62.1	-60.1	-52.1	-52.1	-52.1
CF financing	9.7	24.1	51.5	48.8	34.8	22.8	11.3	0.3	-10.2
Liquidity beginning of year	12.5	4.3	13.0	24.1	31.8	33.5	33.0	27.5	21.0
Liquidity end of year	4.3	13.0	24.1	31.8	33.5	33.0	27.5	21.0	29.7

Key figures

percent	2023 act.	2024e	2025e	2026e	2027e	2028e	2029e	2030e	2031e
Sales growth	16.8%	77.9%	195.3%	137.9%	174.3%	63.4%	30.7%	17.9%	20.4%
EBITDA margin	-614.5%	-385.2%	-139.8%	-29.0%	42.8%	58.9%	64.0%	65.7%	68.5%
EBIT margin	-796.4%	-502.9%	-221.8%	-94.2%	1.1%	27.5%	36.1%	39.0%	44.2%
EBT margin	-825.8%	-564.7%	-244.1%	-115.8%	-11.3%	17.0%	26.5%	29.8%	36.0%
Net margin (after minorities)	-829.3%	-566.7%	-244.7%	-110.3%	-10.9%	15.2%	17.6%	19.9%	24.0%

Annex III: Sensitivity analysis

	Perpetual cash flows growth				
WACC	**2.0%**	**1.5%**	**1.0%**	**0.5%**	**0.0%**
5.1%	121.19	99.55	83.16	70.31	59.97
5.6%	95.52	79.66	67.23	57.23	49.00
6.1%	76.31	64.27	**54.80**	46.63	39.97
6.6%	61.43	52.06	44.35	37.90	32.43
7.1%	49.62	42.16	35.92	30.62	26.06

Disclaimer

Editor

sc-consult GmbH
Alter Steinweg 46
48143 Münster
Internet: www.sc-consult.com

Phone: +49 (0) 251-13476-94
Telefax: +49 (0) 251-13476-92
E-Mail: kontakt@sc-consult.com

Responsible analyst

Dipl.-Kfm. Holger Steffen

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 17.02.2025 at 18:25 pm and published on 18.02.2025 at 8:15 am.

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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
05.12.2024	Speculative Buy	56.50 Euro	1), 3), 4)
08.10.2024	Speculative Buy	58.00 Euro	1), 3), 4)
08.07.2024	Speculative Buy	59.60 Euro	1), 3)
29.05.2024	Speculative Buy	59.00 Euro	1), 3), 4)
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)

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