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PYRUM

Pyrum Innovations AG

Pyrum Innovations AG

1st Half Year Report 2024

PYRUM

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Global End-of-Life-Tire (ELT) market accounts for approx. 30.9 mt p.a.

… as tightening regulatory environment forces countries and corporates to take action

Global ELTs Market comparison 2024 to 2030 (estimations Pyrum)

Worldwide annual volume of end-of-life tires:

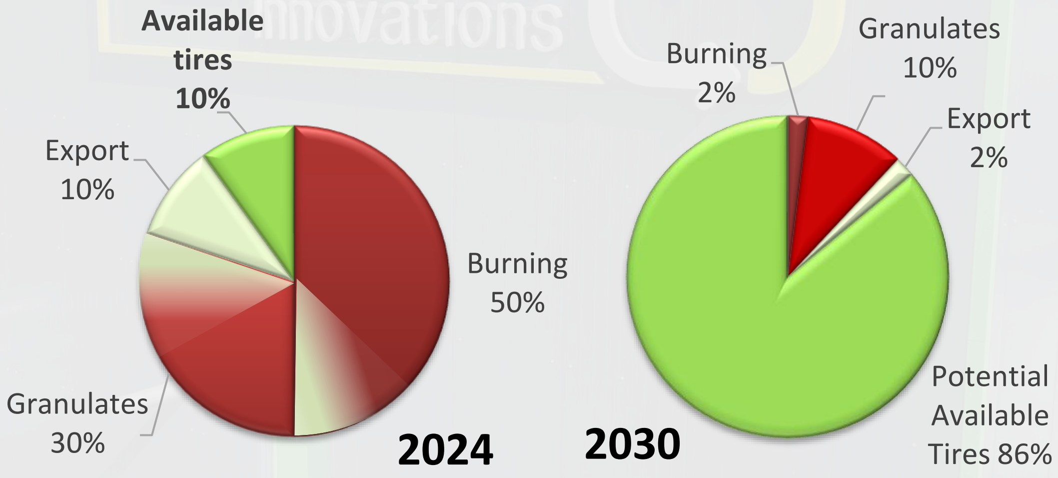
30.9 million tonnes

=> Market size: 22.5 Billion €/Year*

European annual volume of end-of-life tires:

3.4 million tonnes

=> 2.5 Billion €/Year*



Tightening regulatory environment

Landfill Ban
The landfill of End-of-Life-Tires and shredded tires is prohibited

Ban on incineration
Prohibition of burning rubber products
Prohibited the use of shredded tire granulate outdoors

Ban of Rubber granulates
Summer 2023: EU has decided to forbid the use of rubber granulates for certain uses (microplastics) => 30 % of used tires are used for this purpose

NEW

OEM Audits are requiring circularity grades
The market is pushing for new raw materials, **Official Continental goal 100% Circular until 2050**

NEW

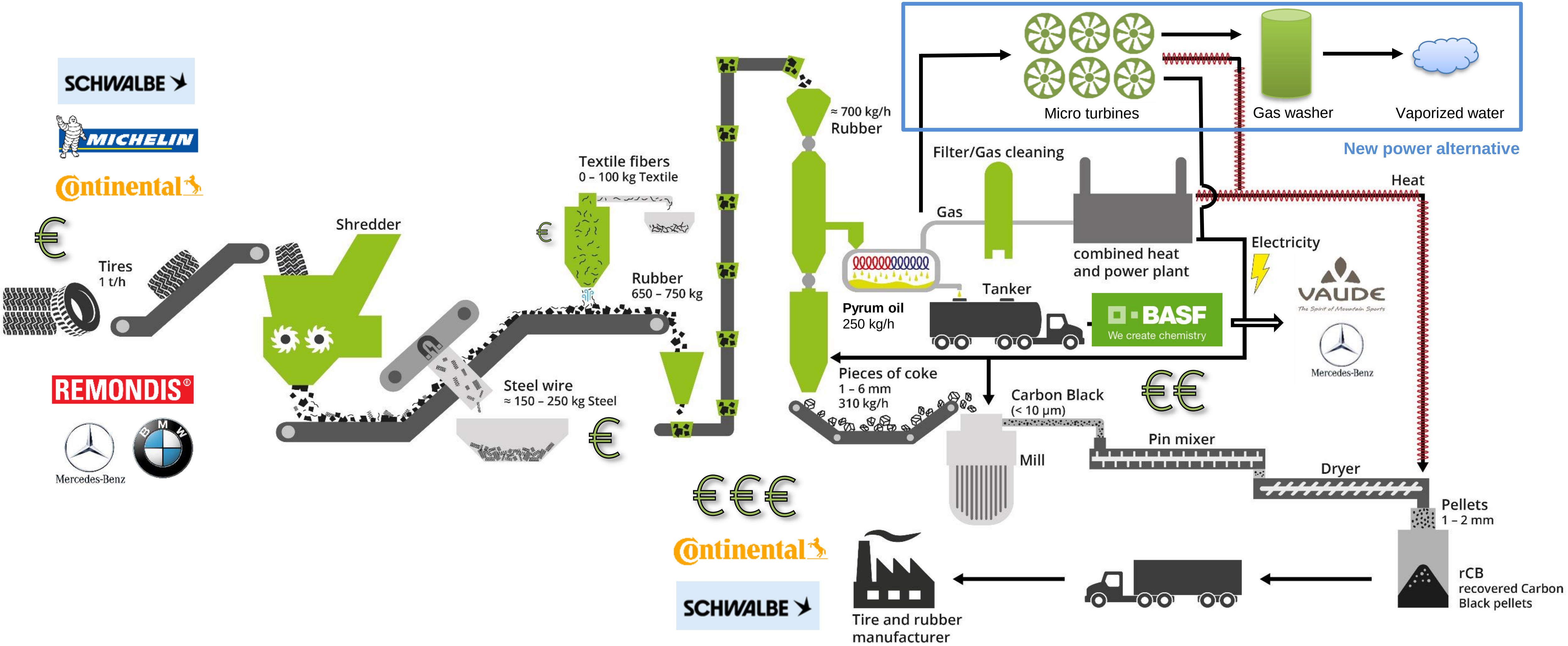
Increased Tire Export in 2024
Burning of tires starts to slow down in 2024, the new alternative is export to Turkey and India => illegal!

** Based on 100 €/ton Gatefee, 250 €/ton Steel, 550 €/ton Pyrum Oil and 1.200€/ton rCB*

Pyrum offers patented technology with strong value proposition…

… converting rubber into several high value chemical products – thermolysis oil, carbon and gas

How Pyrum creates value



Newly developed Power System

First build and operated in TAD 2 & 3

Power engines based on gas combustion motors from MAN

Advantages:
- In operation at Pyrum since 2015 (test) and since 2020 in 24/7 operation
- Good maintenance structure and easy to acquire spare parts
- More electrical power generated = enough electricity for Pyrum reactors + Annex units

Disadvantages
- Huge Opex costs (filters before the engines and after the engines)
- Many maintenance stops and need for 1 refit per year (50,000€/engine/year)
- Huge engine oil consumption
- No guarantee from engine suppliers yet! Pyrum gas is no „standard gas“
- Little heat production = not enough for rCB Pellet drying

The „New“ power system based on micro turbines

Advantages:
- Little maintenance costs as turbines can run for months nonstop
- Very high combustion temperatures > 900°C = lower emissions
- No pretreatment of gas required, Pyrum gas can directly be used
- Higher heat production = enough for rCB pellet drying
- Guaranteed no dioxins and fouranes

Disadvantages
- Bigger foodprint on building site = requires more space for new plants
- Less electric energy produced = just enough for the Pyrum reactors
- New technology, no long-term experience with Pyrum gas

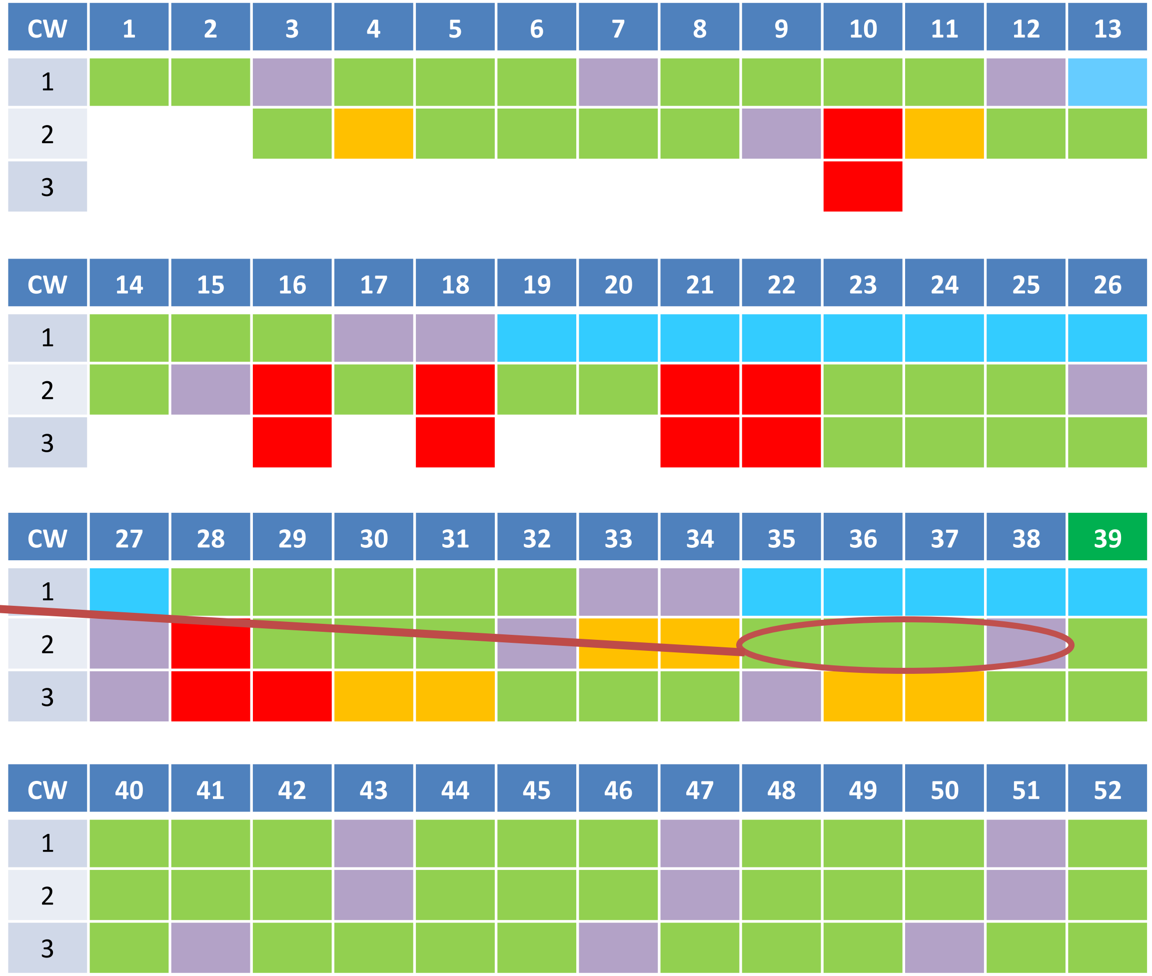
- **The development of the gas turbine system has caused extra costs of about EUR 2.5 million and approx. 6 months delay on TAD 2 & 3 but it is a huge competitive advantage**
- **One system is not replacing the other system, the systems are complementary. There will be Pyrum sites with power generators and others with turbines**
- **USP: Pyrum is the only pyrolysis supplier having developed both systems to industrial scale and is operating both systems on daily basis. Huge competitive advantage**

News and Facts on TAD 2 & 3

Pyrum TAD 2 & 3 (New serial units in Dillingen)

- **Ramp up start of TAD 2 in January 2024**
  - Ramp up to 80% daily capacity in **only 6 days!**
- **Ramp up start with TAD 3 since June 2024**
  - Ramp up to 80% daily capacity in **only 2 days!**
- **War in Ukraine has caused many quality issues, even with premium suppliers**! **All issues solved (**e.g. Bad welding seams, leaking tanks, bad filters)
- **Process issues identified and solved** (e.g. foam in oil tanks, crystals in gas tubes)
- **The lack of qualified staff was a real issue. At the end we were able to establish a 24/7 operations team for TAD 2 & 3**. But it took months
- **Process stability factor at CPK = 3.6 (KW 38)** . Must be over 1.66 to prove stable production according to Continental audit.
- **Maximum capacity test at 100% daily capacity is ready to start in KW 40**

Production details week by week since January 2024*



Claim against supplier
Lack of staff
Production
Regular maintenance
Pyrum process improvements

* Weeks are rounded up and down

News and Facts on TAD 2 & 3

Top view

Status quo TAD 2 & 3

Eldan Shredder: 6 to/h tyre input = 600 car tyres/h

Pyrum Reactors 2&3 725 kg/h per reactor

Gas Turbines: 5 turbines with 150 kW/e each

Exhaust Gas Washer: including water treatment

Hosokawa Mill and Pelletizer: 1,650 kg/h input capacity

Oil Storage: 2 x 60,000 liters underground

Pyrum Control Room: for 3 parallel operators

Important Milestones in 2024

New Pyrum Plant in Perl/Besch

GreenFactory II

Facts

- **Size of building site:** 25,000 m²
- **Annual tyre capacity:** 20,000 tons

- **Units build:**
  - Tyre shredder 8 tons/h
  - Pyrum reactors 3 units
  - Gas power plant
  - Mill- and Pelletizer 1,650 kg/h

- **Investment:** EUR 45 million
- **New employees:** 40-45
- **Annual turnover** EUR 15 million

- **Planned operation**
  - Tyre shredder: 16h/day
  - Pyrum reactors 24/7, 3 weeks
  - Gas power plant: 24/7, 3 weeks
  - Mill- and Pelletizer 24/7

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- **Distance to nearby logistics**
  - Railway (DB): 0 meters
  - Harbor (Mosel): 100 meters
  - Highway (A8): 6 km

Milestones

- **Amendment of the development plan in Perl-Besch in only 5 months!**
  - Successful transformation to „Industrial Area“ in a record time. Normally 2-3 years!

- **Clearing of the building area in only 2 weeks.** Site is prepared to start building

- **No public involvement from now on!** The Amendment of the development plan has secured the green light from the public and all authorities: DB, Telekom, Firefighters, Police, Nabu, BUND, Wasserstraßen- und Schifffahrtsverwaltung des Bundes, Electricity Supplier etc.

- **Operating permit according to BImSchG is accomplished and discussed with the permitting authority**. Permit to start building expected in 2024

- **Operating company founded: „Pyrum GreenFactory II“**
  - Legal form: GmbH
  - Owner: 100% Pyrum Innovations AG
  - Equity: 5.9 Mio. EUR

Plant Preview

Important Milestones in 2024

Guaranteed Input of Tyres and Offtake of rCB!

Offtake Agreements

Continental

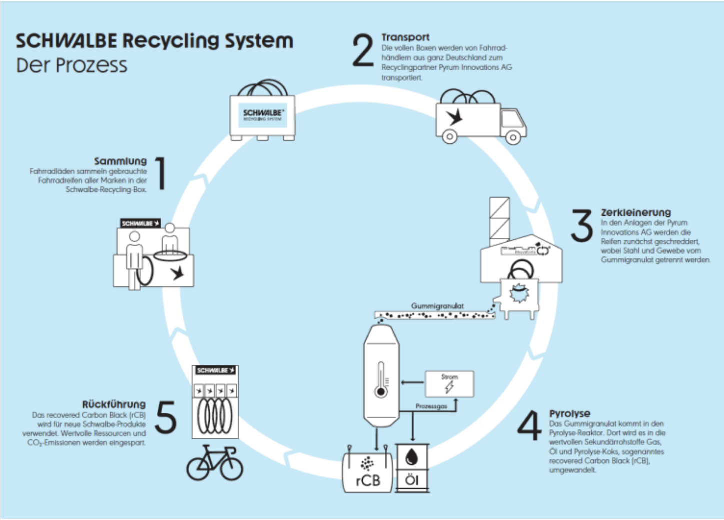
- **New offtake agreement for rCB signed in July 2024, Key facts of this contract:**
  - 10-year bankable offtake guarantee for the quantity of 2 new Pyrum plants or 6 reactors
  - New price for rCB in a range between EUR 1,200 and EUR 1,800 per ton
  - Advance payment already made for future rCB deliveries
  - Possible increase of volume from 2028
- Continental forklift tyres are made of Pyrum rCB since CW23/2023
- Continental announces to be 100% circular until 2050

SCHWALBE

- Offtake agreement for the already produced tyre „The Green Marathon“ in place since 1.5 years
- **Official announcement to switch 70% at the whole Schwalbe production to Pyrum rCB.**
- New offtake agreement for the 70% production switch under final negotiation

Negotiations for long term offtake agreements, with other premium tyre manufacturers, are ongoing

Systems already in place



End-of-life tyre input guarantees

Continental

- **New Continental rCB contract contains clear commitments to deliver ELTs to Pyrum**
- **Continental required the right to deliver ELTs to Pyrum and Pyrum agreed under the condition that Continental is also obliged to deliver => Very important to secure ELTs**
- **Pre-Contract for the delivery of ELTs is included in the new rCB offtake agreement. A separate ELT delivery contract will be signed before end of 2024. This secures the tyres for our future plants**

SCHWALBE

- **More than 1,800 bike stores in Germany are participating in the Schwalbe/Pyrum Recycling System = almost 1/3 of German market.**
- **To date, more than 1,000,000 bicycle tyres have already been recycled and returned to the cycle.**
- **The system will be extended to whole Europe once Pyrum has more production capacity**

ELT= End of Life Tyres.

The last important Milestone to close the loop: rCB

No rCB can be sold to the market without those certificates

Pyrum was transformed from a Start-Up to a certified Automative supplier in 1 year!

- **Received certificates:**
  - Ecovadis: Silver Status
  - VDA 6.3: Continental, Pirelli, Hankook, Mercedes, BMW
  - ISCC+ for Oil and rCB
  - ISO 9001, ISO 14001
  - Complety new company structure and staffing

- **Milestones:**
  - First official rCB delivery in April 2023
  - First „in Spec“ production since June 2023
  - Stable „in Spec“ production since September 2023
    - ➢ **ESSENTIAL for order of new line!**
    - ➢ **Price drop from EUR 12 million to EUR 6 million (incl. supplier guarantees)**

Carbon (TCU)
0,5 - 5 mm

Milled rCB
10 - 14 µm

rCB
0,8 - 2 mm
Hardness 35 – 50 cN

Important Milestones in 2024

New Plants all arround Europe!

Map of running projects

Key Facts

Projects

- Projects in pipeline: > 20
- Started projects: 9
- New projects in 2024: 4
- Number of countries: 6 countries
- Permitting in progress: 7 projects

Business numbers of all 9 started projects:

- Recycling volume: 180,000 tons/y
- % of EU ELT market: 5.2 %
- Investment volume: EUR 500 million
- Oil volume: 45,000 tons/y (100% sold)
- rCB volume: 55,000 tons/y (25% sold)

Strong Partners Involved:

REMONDIS
suez
Continental
UNITANK
SCHWALBE
GreenTech Recycling
BASF We create chemistry

Extensive project pipeline due to attractive framework conditions

Demand is higher than capacity; projects are partly far advanced or have been started procedurally

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	✓	✓	✓	✓	✓	✓
SPV	2	Greece	Athen „Thermo Lysi SA “	✓	✓	✓	✓	✓	✓
SPV	3	Cech Republic	Sokolov	✓	✓	✓	✓	✓	
SPV	4	Germany	Bremen	✓		✓	✓	✓	
EXT	5	UK	SUEZ UK	✓	✓	✓	✓	✓	
SPV	6	Germany	Revalit GmbH, Bayern	✓	✓		✓		✓
SPV	7	Germany	Emleben	✓		✓	✓	✓	
100 %	8	Germany	Hessen oder NRW	✓					
SPV	9	…							
SPV	10	DE & Europe	Unitank 2-10	✓					
SPV	11	Sweden	Billingsford	✓	✓	✓			✓

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.

Attractive plant economics is the enabler for the rapid roll-out

Due to NDAs we cannot give exact prices for end products

BASF
We create chemistry

PYRUM

Estimated plant economics – operating at 20,000 tonnes p.a. capacity

1 **Total revenues, end-products and gate fee**				**EUR ~ 17.5 m**
Gate fee	*EUR 100/ton*	x	*22,700 tons*	*EUR ~ 2.3 m*
Steel	*EUR 300/ton*	x	*5,675 tons*	*EUR ~ 1.7 m*
Oil (Range 550-750)	*EUR 650/ton*	x	*4,563 tons*	*EUR ~ 3.0 m*
rCB (Range 1.200-1.800)	*EUR 1,500/ton*	x	*7,072 tons*	*EUR ~ 10.6 m*
Gas	*Used*	x		
Heat / Energy	*used*	x		
2 **Direct costs**				**EUR ~ 2.6 m**
3 **OPEX**				**EUR ~ 4,9 m**
4 **EBITDA**				**EUR ~ 10.0 m**
4 Investment(1)				EUR ~ 50 m
3 **Payback EBITDA basis**				**~ 5.0 years**

Roll Out breakthrough:

NEWS: NEW CONTRACT WITH BASF signed 15.11.2023

- **Goals of the contract:**
  - Support the Pyrum Roll Out plan
  - New guaranteed prices for oil and rCB

- BASF Grants Pyrum a **loan of up to EUR 50 million**
- **EUR 25 million of the loan:** are directly available
- **EUR 25 million or the loan:** are available as soon as Pyrum gets EUR 50 million investment in new Pyrum plants

- **What counts in these EUR 50 million that Pyrum needs to acquire to unlock the 2nd tranch of EUR 25 million from BASF?**:
  - Loans from Banks or Investors
  - Bonds
  - Capital increase
  - Investment from partners in SPVs. e.g.: If Remondis invests EUR 28 million in a Pyrum plant, these EUR 28 million count in the EUR 50 million

➢ Enables to invest **EUR 100 million** in plants in the next 3 year!
➢ Goal is that Pyrum becomes bankable and receives Project financing in the next step

The forward-based information on this slide is shown as an example of a possible future development and is therefore solely for illustrative purposes. Such figures are based on multiple assumptions and there are no agreements entered into to support development illustrated. Such figures are not estimates or forecast and should therefore not be relied upon. Actual figures may therefore deviate materially.

Consolidated income statement for the first half of 2024

Results overview

KPIs in kEUR	1 Jan. - 30 Jun. 2024	1 Jan. - 30 Jun. 2023	∆ kEUR PL	∆ % PL
Revenues	**708**	**501**	**165**	**41,32%**
Increase of finished and unfinished goods	215	40	175	
Other own work capitalised	3.614	7.613	-3.999	-52,53%
Total output	**4.537**	**8.154**	**-3.617**	**-44,36%**
Other operating income	800	356	444	**124,72%**
Expenses for raw materials	3.728	7.447	-3.719	**-49,94%**
Personnel expenses	3.176	2.471	705	**28,53%**
Other operating expenses	1.600	1.716	-116	**-6,76%**
Other taxes	15	16	-1	**-6,25%**
EBITDA	**-3.182**	**-3.139**	**-43**	**1,37%**
Depreciation, amortisation and write-downs of intangible non-current assets and property, plant and equipment	1.106	1.113	-7	**-0,63%**
EBIT	**-4.288**	**-4.252**	**-36**	**0,85%**
Income from long-term loans	0	0	0	
Interest and similar expenses/income	497,5	156	342	**218,91%**
Results after taxes	**-4.771**	**-4.392**	**-379**	**8,62%**
Income and profit taxes	0	0	0	
Loss for the period	**-4.786**	**-4.408**		

Pyrum consolidated balance sheet (condensed) for the first half-year 2024

Overview

in kEUR	30 Jun. 2024	31 Dec. 2023	Share of capital 12M 2023
Non-current assets			
Non-current intangible assets	5.186	5.638	8,79%
Property, plant, and equipment	42.648	39.458	72,30%
Non-current financial assets	27	30	0,05%
	47.861	**45.126**	
Current assets			
Inventories	661	446	1,12%
Other current assets	670	702	
Cash at hand and in bank	9.502	4.483	16,11%
	11.067	**5.631**	
Deferred expenses	59	68	0,10%
Equity	**17.593**	**22.380**	**29,83%**
thereof accumulated losses	-37.719	-32.932	
Provisions and Accrued Liabilities	3.151	3.188	5,34%
Liabilities	38.242	25.358	64,83%
Total assets	**58.987**	**50.926**	
Equity ratio	**29,83%**	**43,90%**	

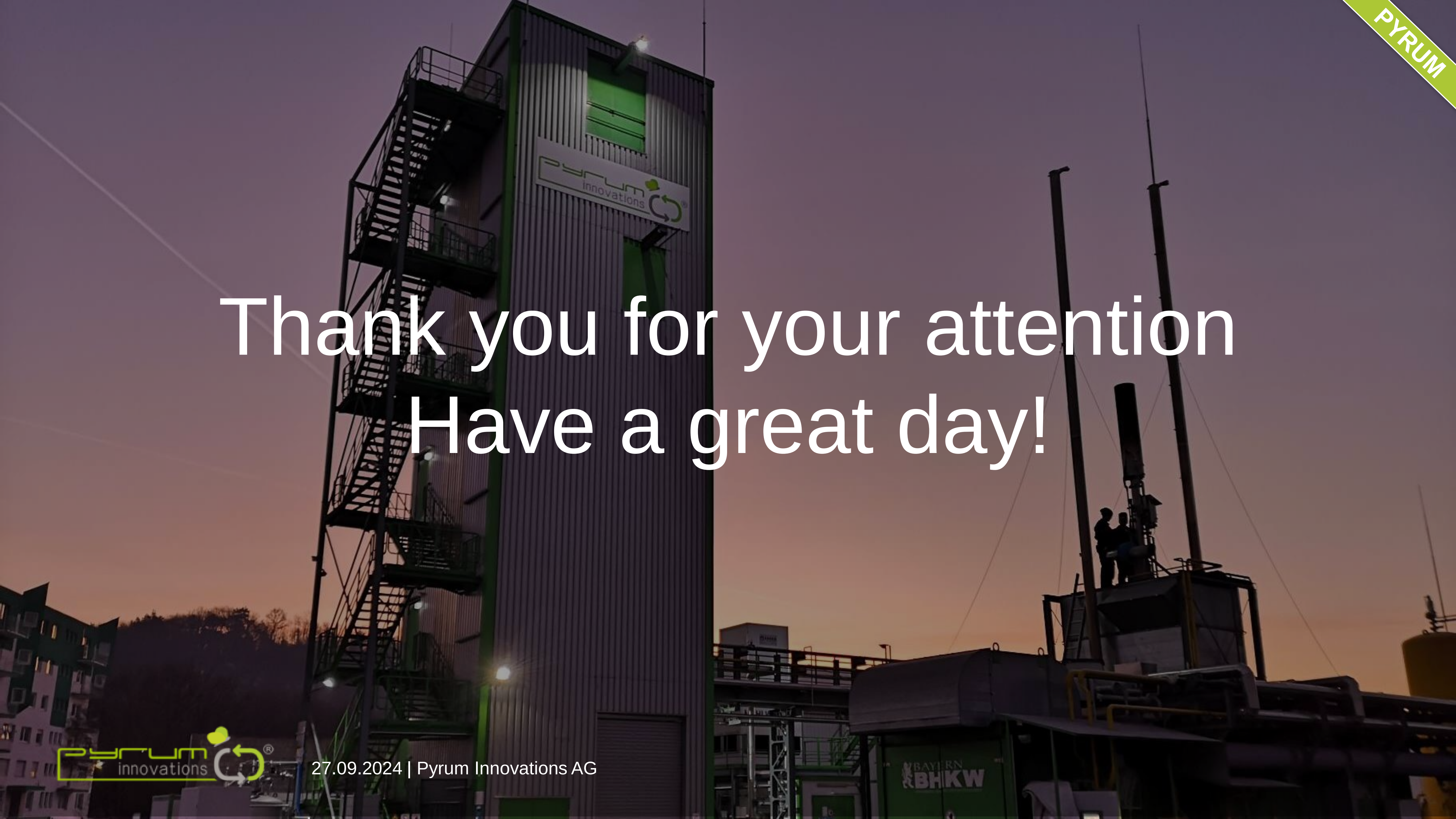
PYRUM

What are the next steps and priorities?

Key Goals and Milestones

A clear pathway forward is essential

PRIORITIES	NEXT STEPS	TIMELINE
Get access to funds to finance the second half of the roll out plan and Pyrum	TAD 2 & 3 have to prove 100% operation and 1.000 operating hours (asked by most banks, funds, investors)	Q4 2024
	Technical due diligence approval from external institute proofing the operation of TAD 2 & 3 => Ongoing	Q1 2025
	Legal due diligence analysing the offtake agreements for the oil and the rCB => Ongoing	Q1 2025
	Non deal road show to finally explore all possibilities	Q4 2024
Increase rCB production volumes to increase turnover as quick as possible	Increase capacity of Mill- and Pelletizer 1. Keys to increase capacity have been found in September 2024! Final output is 45-50% but after the pelletizer output is 90% => 40-45% of the pellets are destroyed after the pelletizer in the sieve, conveyor or big bag station.	End of 2024
	Continental audit to process crude carbon from TAD 2 & 3 in Mill and Pelletizer 1. This needs a special permit	October 2024
	Install and start production of Mill- and Pelletizer 2 in Dillingen. This unit has 5-6 times the capacity of Mill- and Pelletizer 1. The mill has arrived, ground works are being done now, parts for pelletizer should arrive until end of 2024 but nobody gives guarantees due to problems in delivery chains. We are in daily discussions with suppliers to speed things up.	Q2 2025
Install as soon as possible Pyrum Plant 2 in Perl-Besch	Prepare the ground to be able to start building directly after reception of the permit => Ongoing	Q4 2024
	Finish the detail engineering in order to order all steel and tubing parts quickly after completion of the financing. This is the next step after the long lead items that are already ordered	Q4 2024
	Get as soon as possible the green light to start building (BimSchG §8a)	Q4 2024
Stabilise staff situation in the production	Getting access to qualified and trustable staff becomes more and more difficult. We are changing our staff leaders and the internal structure to make the company more attractive and flexible	Q4 2024
	Spare staff is hired in order to secure operations. A 24/7 operation can not stop! Back-up teams are built	Q1 2025
	Recruiting new staff for Mill- and Pelletizer 2 and the new plant in Perl-Besch is starting from today in order to be prepared	Q4 2024



Thank you for your attention
Have a great day!