



Valmet Beyond Circularity

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1.4.2025

Valmet Beyond Circularity

Agenda

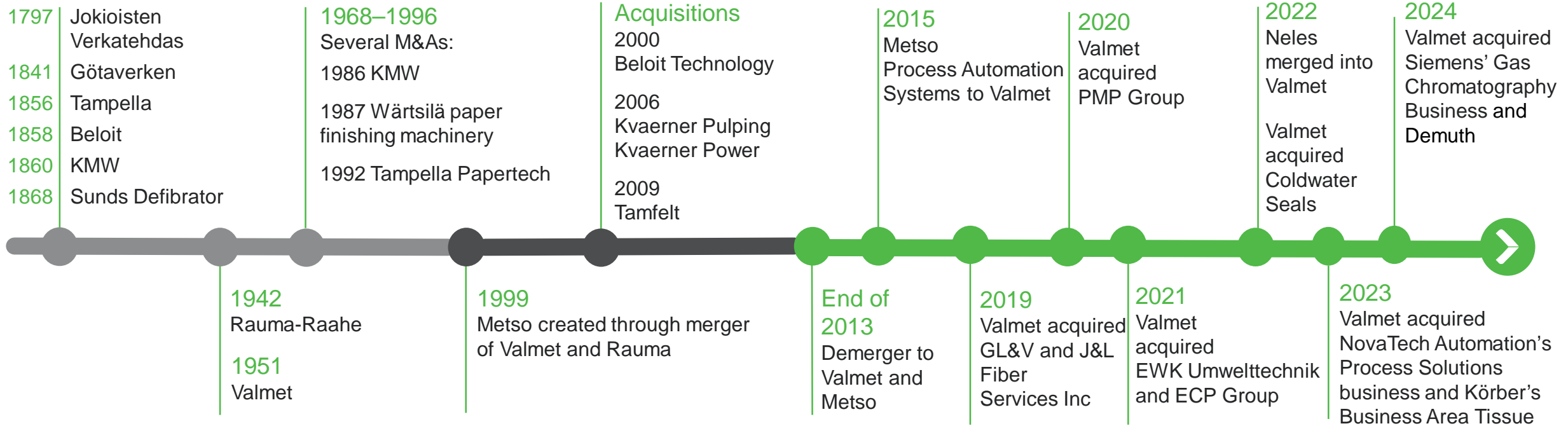
- 1 History of Valmet
- 2 Valmet Today
- 3 Beyond Circularity program
- 4 The seven streams
- 5 Q & A



History of Valmet

Progress built on 225 years of industrial history

From cloth making to high-tech processes



Valmet today

This is Valmet



Unique offering

- Market's widest offering combining process technologies, services and automation, consisting of automation systems and flow control solutions
- Research and development spend EUR 123 million in 2024



Market leadership

Strong market position

- Pulp #1
- Energy #1–3
- Board and Paper #1-2
- Tissue #1
- Services #1–2
- Automation
 - Automation Systems #1¹⁾
 - Flow Control #1¹⁾



Strong global presence

- > 19,000 professionals
- > 110 service centers
- 76 production units
- 34 R&D centers



Leader in sustainability

- 360° Sustainability Agenda
- Included in the CDP Climate A List 2023 and 2024
- Gold Medal in the Ecovadis sustainability assessment
- Highest AAA ranking in MSCI ESG ratings

Global customer base across various process industries

1) In pulp and paper

Unique offering combining process technologies, services and automation

Board and paper technologies

- Board and paper production lines
- Tissue production and converting lines
- Rebuilds
- Machine sections

Pulp technologies

- Complete pulp mills
- Pulp mill processes
 - Wood handling, Cooking and fiber line, Pulp drying and baling, Chemical recovery

Energy technologies

- Heat and power generation
- Air emission control
- Biofuels production

Services

- Spare and process parts
- Workshop and roll services
- Fabrics
- Maintenance development and outsourcing
- Field services
- Process upgrades
- Industrial Internet solutions

Automation systems

- Distributed Control Systems (DCS)
- Quality Management Systems (QMS)
- Analyzers and measurements
- Services and Industrial Internet solutions

Flow Control

- Valves
- Valve automation
- Valve controls



Valmet's R&D addresses customer needs and global megatrends

R&D focus areas

- Promotion of renewable materials
- Raw material, water and energy efficiency
- Emission reductions
- Circularity
- Productivity and environmental improvements with digitalization

34

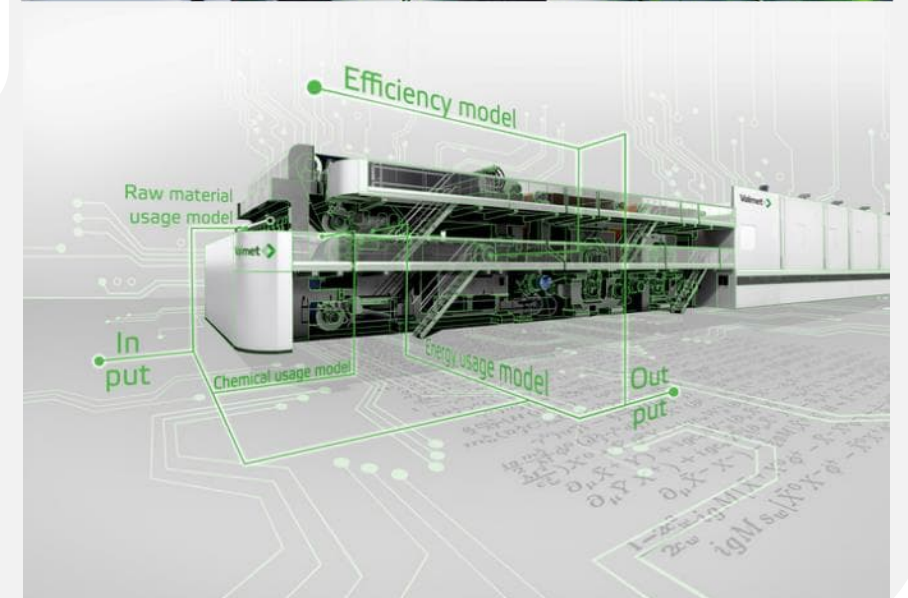
research and
development centers



EUR **123** million
R&D spending
in 2024



1,400
protected
inventions



Valmet Beyond Circularity

We need a shift toward sustainable growth



- Resource scarcity, overconsumption, and the impact of fossil materials on the climate are huge challenges.
- We need a shift toward economically, environmentally and socially sustainable growth and an economy that is not based on fossil fuels and the overconsumption of natural resources.
- The green transition calls for massive changes and collective efforts from individuals, businesses, and governments, but it also offers new opportunities.
- Valmet launched an ambitious research and development program called **Beyond Circularity** in 2022 to enhance its readiness to support the green transition in customer industries.



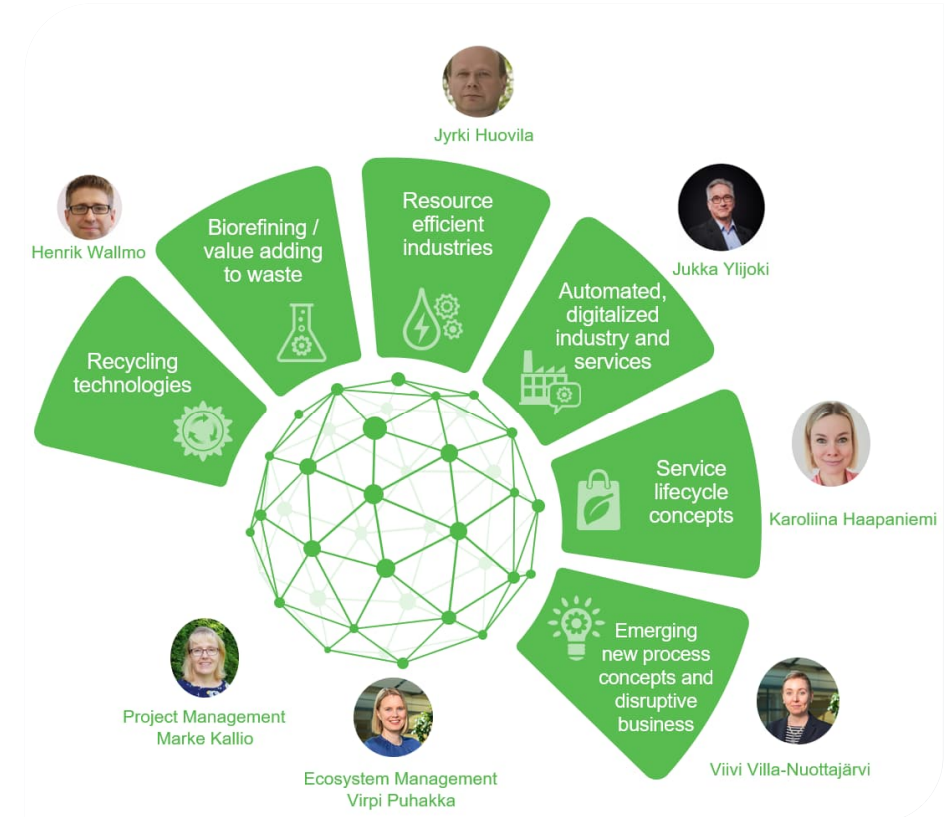
Beyond Circularity program in short

Transforming waste and emissions into valuable resources for sustainable growth



- Valmet's R&D program where Valmet and its ecosystem come together to innovate, renew and enable their customer industries to shift to carbon neutrality and to facilitate green transition.
 - Circularity is at the core of the program and its ecosystem.
 - Targets are closely connected to Valmet's technology vision 2035 and Valmet's Climate Program – Forward to a carbon neutral future.
- A new green transition ecosystem is built as part of the program.
- Significant investments into research and development
 - Valmet plans to invest €40 million during 2022-2025.
 - Additional €20 million from Business Finland (Veturi initiative).
 - Ecosystem: €50 million from ecosystem participants and additional €50 million from Business Finland.

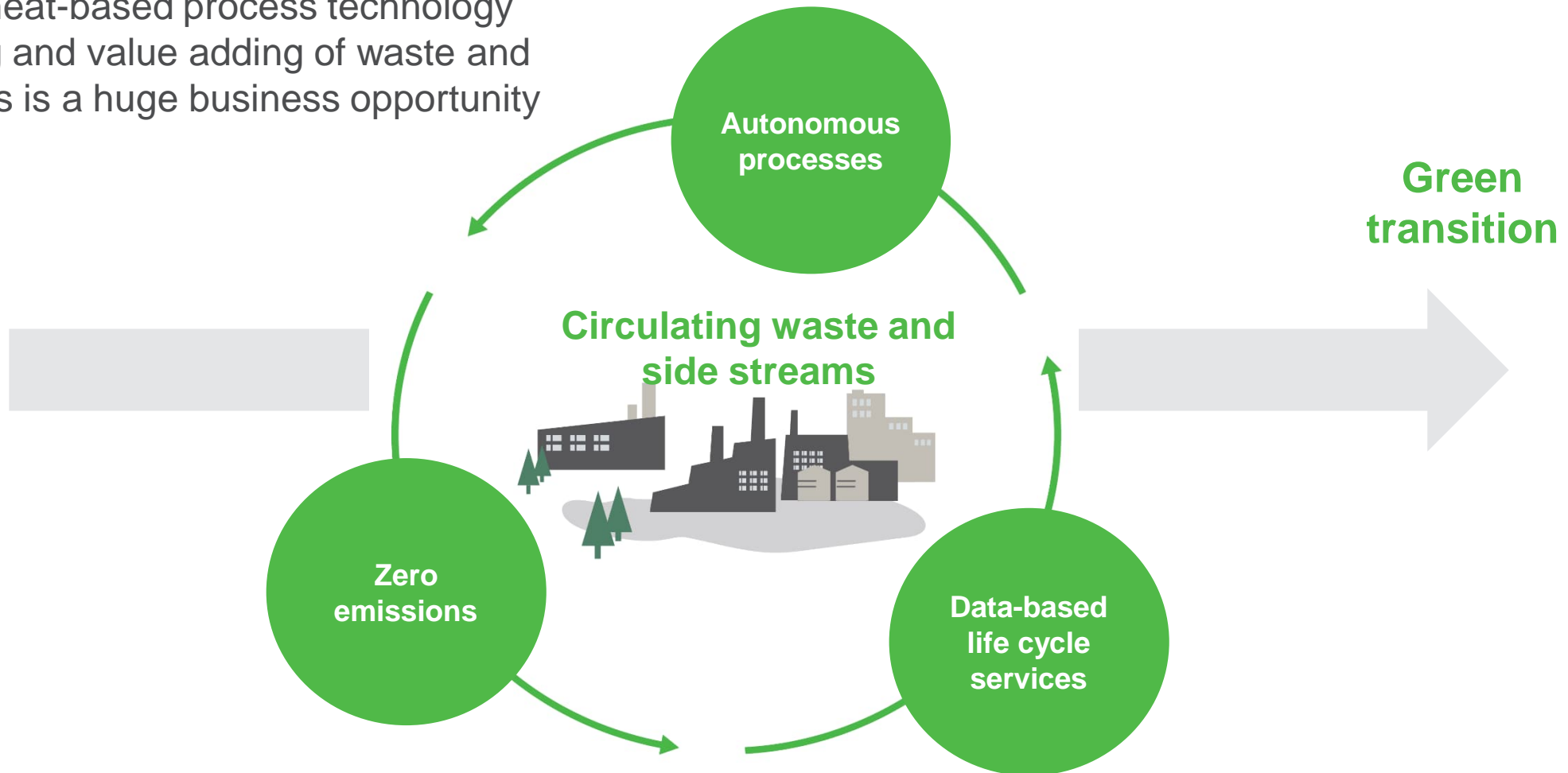
The program is implemented through seven streams



Valmet's Technology Vision 2035



Water and heat-based process technology for recycling and value adding of waste and side streams is a huge business opportunity for Valmet



Valmet's climate program 'Forward to a carbon neutral future' sets targets and actions for the entire value chain by 2030

TARGETS BY 2030 FOR THE ENTIRE VALUE CHAIN

SUPPLY CHAIN

-20%

CO₂ emission reduction¹

MAIN ACTIONS

Actions to reduce emissions in direct purchasing and logistics includes

- increased share of recycled steel in products
- support high CO₂ intense suppliers to reduce emissions
- re-design light weighted steel products, introduce alternative raw materials and optimize manufacturing methods of components
- centralize spend to selected suppliers offering low carbon transportations
- continue to develop freight planning

OWN OPERATIONS

-80%

CO₂ emission reduction¹

MAIN ACTIONS

Actions to reduce emissions includes

- replace fossil fuels with renewables in locations
- purchase CO₂ free electricity and district heat
- implement energy efficiency improvements in locations
- promote low carbon commuting and reduce business travel flights

1) Baseline 2019

USE PHASE OF VALMET'S TECHNOLOGIES

-20%

Further reduced energy use of Valmet's current technologies¹

MAIN ACTIONS

Further enhance energy efficiency of Valmet's existing pulp and paper technologies by 20% as part of Valmet's continuous R&D work

100%

Carbon neutral production

- Providing customers with Valmet's current energy solutions that enable carbon neutral energy production by using biomass
- Developing new technologies to enable entirely carbon neutral pulp and paper production when the customer is using carbon neutral electricity

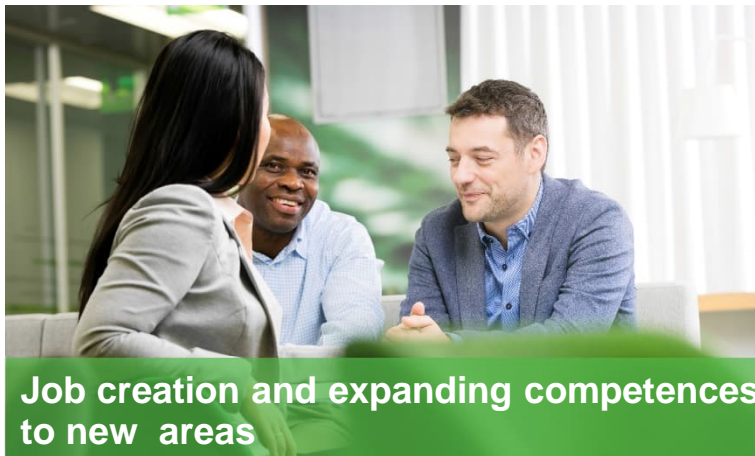
Wide competence ecosystem is needed to drive innovation and stay ahead of change and competitiveness



- A new green transition ecosystem is being built as part of the Beyond Circularity program.
- The core of the ecosystem is Valmet's unique triangular approach of technology, automation and services, enriched by the partners' interdisciplinary expertise.
- We welcome customers, suppliers, startups, universities, third sector, research organizations, funders, and other stakeholders.
- The ecosystem has over 300 partners.



Great potential for Beyond Circularity ecosystem

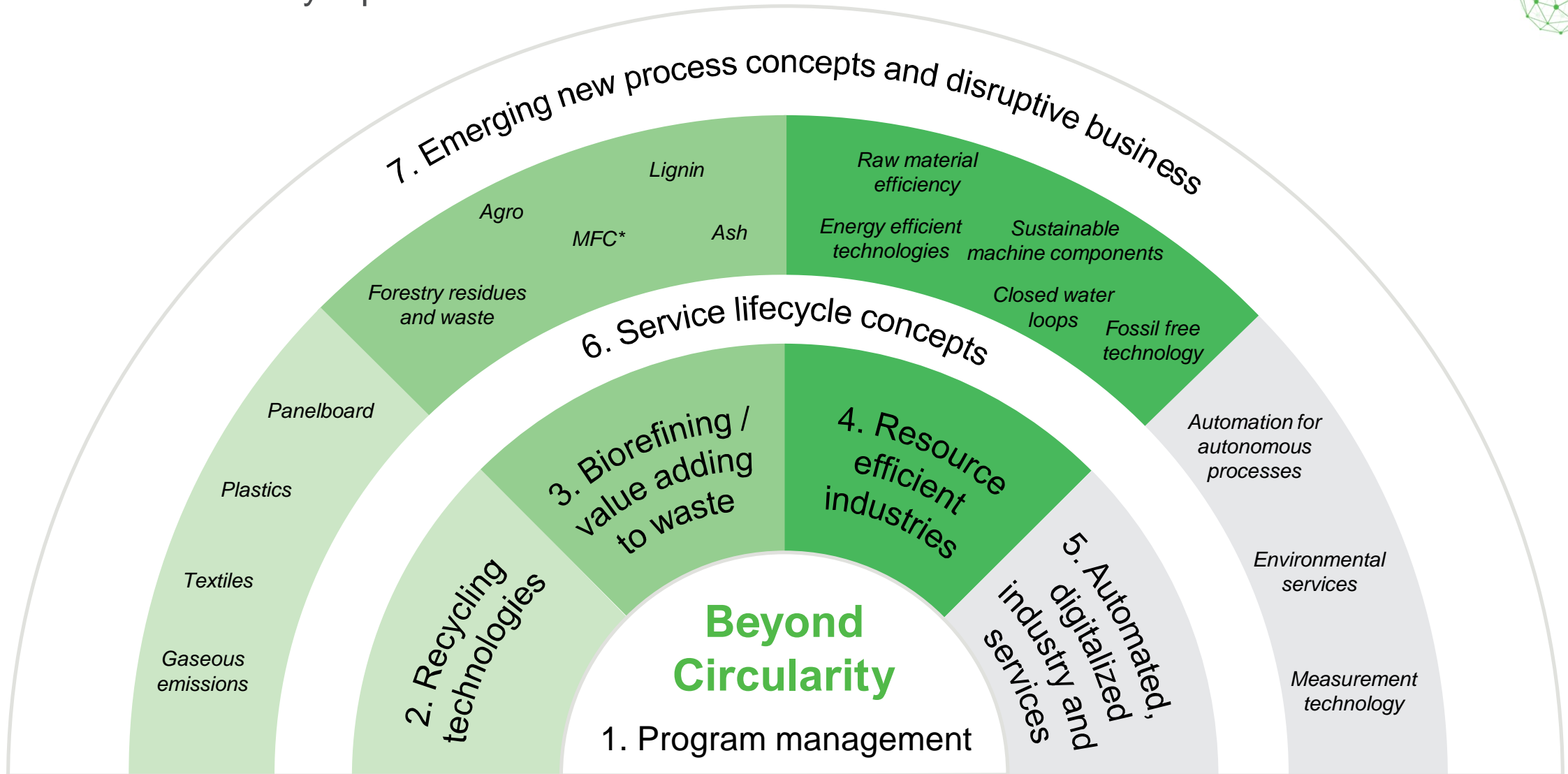




The Beyond Circularity program is
implemented through seven streams

Beyond Circularity is implemented through 7 streams

Streams and their key topics

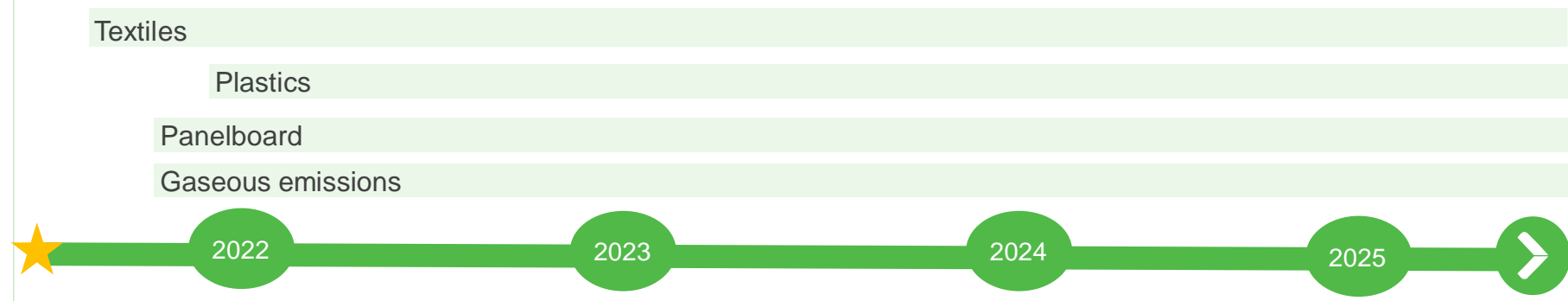


Recycling technologies stream

Valmet Beyond Circularity

- The stream focuses on
 - creating and developing advanced concepts and technologies for recycling and upcycling of waste, e.g. plastics, textiles, panelboard, solids, liquids and other side-streams rejects
 - developing solutions to reduce emissions
 - creating upgrades to develop new products

Schedule



Valmet's stream
lead:

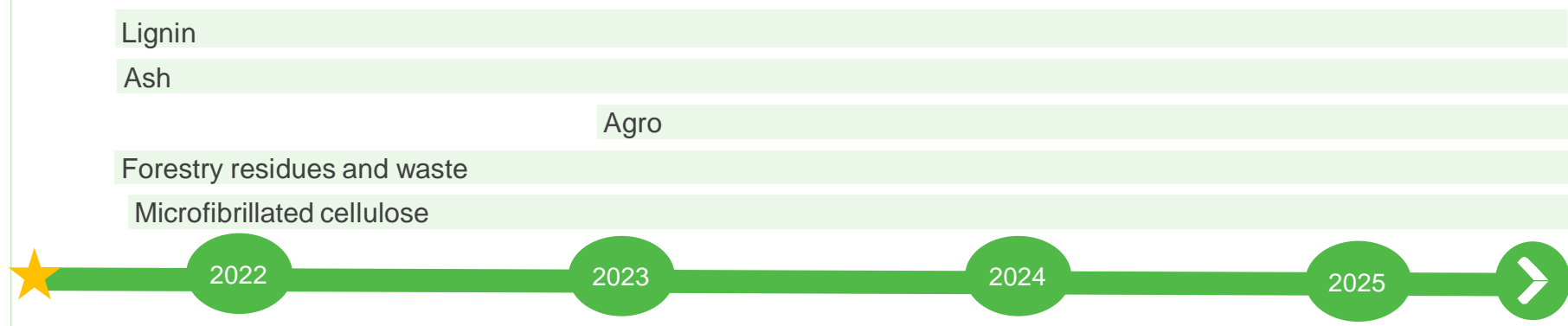
Henrik Wallmo

Biorefining / value adding to waste stream

Valmet Beyond Circularity

- The stream focuses on developing advanced biorefining technologies to enhance the circularity in the pulp, paper and energy industry
 - a new biomass pyrolysis solution to turn local sustainable feedstocks into global renewable transportation fuels and biochemical
 - energy efficient continuous process to produce micro fibrillated cellulose for different applications
 - novel process solutions to turn ash waste and lignin into new products

Schedule



Valmet's stream lead:

Henrik Wallmo

Resource efficient industries stream

Valmet Beyond Circularity

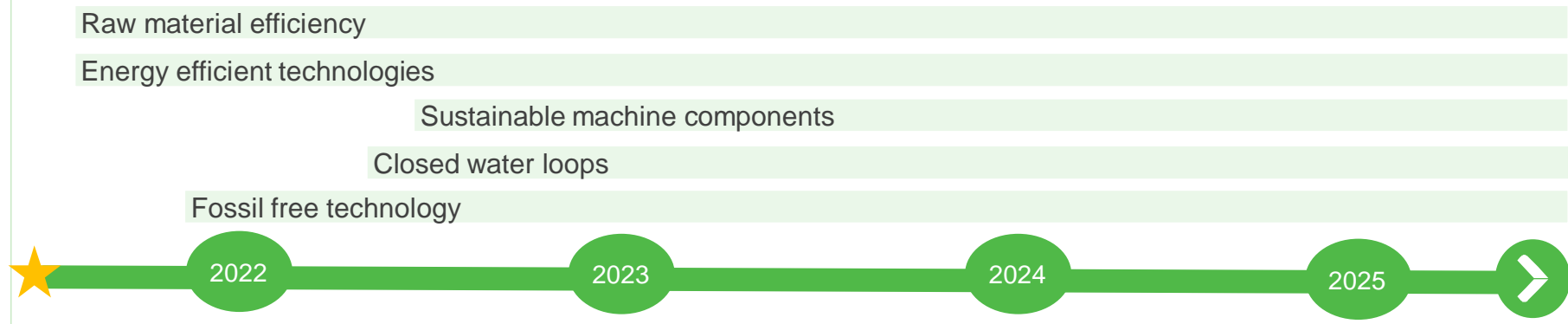


- The stream focuses on

- utilization of low energy heat lost from industrial processes through extended energy integration
- research into new technologies to find more energy efficient solutions
- closing of material loops in industrial processes to enhance material efficiency
- using materials with high energy content as energy storage in industry as a part of smart electricity networks
- finding new, sustainable raw materials to technical solutions



Schedule



Valmet's stream leads:

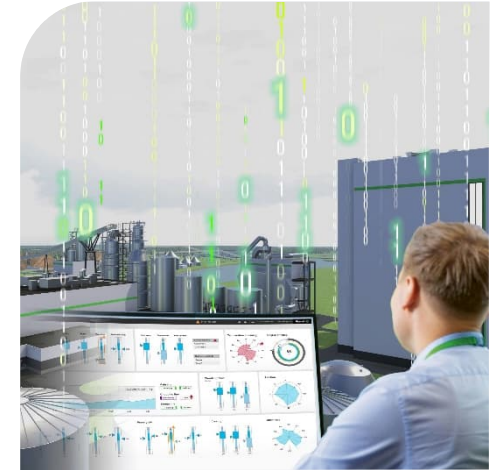
Jyrki Huovila

Automated, digitalized industry and services stream

Valmet Beyond Circularity



- The stream focuses on
 - enabling major leaps towards autonomous mills and safer processes
 - creating a thriving network with partners for developing energy saving and emission reducing services
 - innovating novel process measurements for insight into the new processes developed within this Beyond circularity initiative



Schedule

Automation for autonomous processes: digital platform

Environmental services

Measurement technology



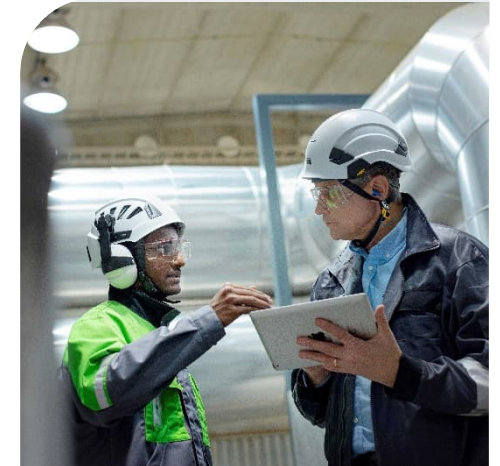
Valmet's stream lead:

Jukka Ylijoki
Teemu Rannikko
Tero Saastamoinen
Heikki Korhonen

Service lifecycle concepts stream

Valmet Beyond Circularity

- The stream aims to
 - conduct research on life cycle modelling of technologies developed in the Beyond circularity program
 - develop lifecycle services concepts, taking into account critical indicators e.g. technical age, emissions, energy consumption and water use



Valmet's stream
lead:

Karoliina Haapaniemi



Emerging new process concepts and disruptive business stream

Valmet Beyond Circularity



- The stream focuses on
 - developing new processes for manufacturing of biochemicals, biofuels, 3D fibers etc.
 - investigating and piloting value chain (pilot and industrial scale technologies, business values, and partnerships) in e.g. food, medical and cosmetics



Schedule

Emerging new process concepts and disruptive business



Valmet's stream lead:

Viivi Villa-Nuottajärvi

Already 39 ecosystem projects ongoing with over 300 partners



Recycling technologies

- **Hi Per**
- **PESCO UP**
- SciSustain
- **SUSTAFIT**
Sustainable fit-for-purpose nonwovens
- TexirC
- UrbanMill
- Ecosystem project, will be announced later



Biorefining / value adding to waste

- **BIO4ALL**
- BioBoost
- CoCoBin
- Depoly2ols
- **GreenAro**
- GROW
- LowCoBin
- Non-wood raw materials
- **redysign**
- ReMatCh



Resource efficient industries

- **AMAZe**
- CAMEL
- Data-driven design for sustainability
- **Emission Free Pulping**
- Energy1st
- IonMan
- POWER Beyond
- Resilient bronze
- **SteamDry**
- Ecosystem project, will be announced later



Automated, digitalized industry and services

- BETTER
- **BIOND**
Data Driven Control for Bioprocesses
- CEBIPRO
- CTAC 2.0
- **HUG**
Hydrogen UnderGround
- **seed FOREST**
- **USWA**
- Virtual Sea Trial



Service lifecycle concepts

- **EBITDA**
- L2C



Emerging new process concepts and disruptive business

- CO2 capture
- HYDROMAT



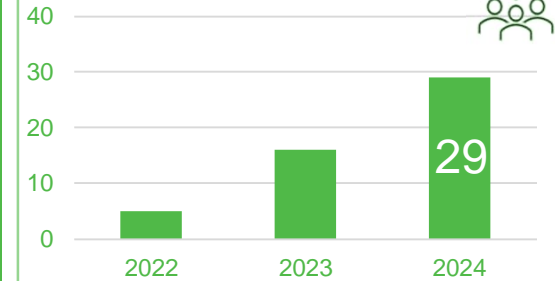
Beyond Circularity 2022 - 2025



4

years

New patents



Valmet's climate program
'Forward to a carbon
neutral future'

Technology vision 2035



Valmet

40

M€

BUSINESS
FINLAND



Funded by the European Union –
NextGenerationEU

20 + 50

M€

M€



400

Valmet R&D experts

Green transition ecosystem

over 300

partners

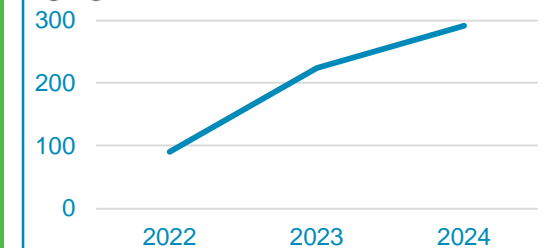


39

joints projects funded



Ecosystem partners



More information about the Beyond Circularity program



Program owner
Viivi Villa-Nuottajärvi
Vice President
Research and Development
Valmet



Ecosystem management
Virpi Puhakka
Director, Ecosystem
Valmet



Internal program management
Marke Kallio
Director, R&D Programs
Valmet

Read more about the program



Q & A

