

The footprint program & Industry 4.0

– Operations

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Alfa Laval footprint program

– For increased competitiveness and an outstanding customer experience



- A top-class end-to-end supply chain with smart manufacturing
- Supports growth and profitability
- Drives the consolidation of our footprint
- Enables an outstanding customer experience



The footprint program

– For increased competitiveness and an outstanding customer experience



- Cost efficiency and sustainable supply chain
 - ➔ Reduction of Cost & Complexity
- Delivery performance improvement
 - ➔ Lead time & Presence
- Capacity increase / optimization to meet future demands
 - ➔ Growth
- Divestment of “the Greenhouse” / selected product groups
 - ➔ Impact & Opportunities



Starting point of the footprint program

– Alfa Laval sites world wide Q4 2016



Presence:

- 60 main sites
- A number of smaller sales offices and service centres



Progress of footprint program 2017-2021

– Major projects



Footprint	Wave 1		Wave 2	Site reduction
	Closed	Closure Q4 2019	Closure Q2 2021	
Consolidation USA				2
Spiral heat exchanger supply chain				1
The Greenhouse, selected product groups				4
Consolidation China				1
Gasketed plate heat exchanger supply chain				-
Decanter supply chain				-
Consolidation India				3
Brazed and fusion bonded heat exchanger supply chain				-
Kolding hygienic fluid handling centre				1
Total				12

Benefits of footprint program

– 2017-2021



- 20% reduction of main sites from 60 to 48
- Payback 5 years
- Considerable upgrade of real estate assets
- Increased growth capabilities
- Critical mass for advanced automation & digitalization, talent attraction & retention
- Direct savings by:
 - Moving to low cost countries
 - Cost avoidance by less duplications
 - Lower running cost (internal services and real estate maintenance)



Qingdao, China

Example of a footprint project

– Consolidation Krakow



- Existing footprint facility
- Lower cost country

Taking Alfa Laval into the future

– Industry 4.0 and Smart manufacturing



Smart
technology



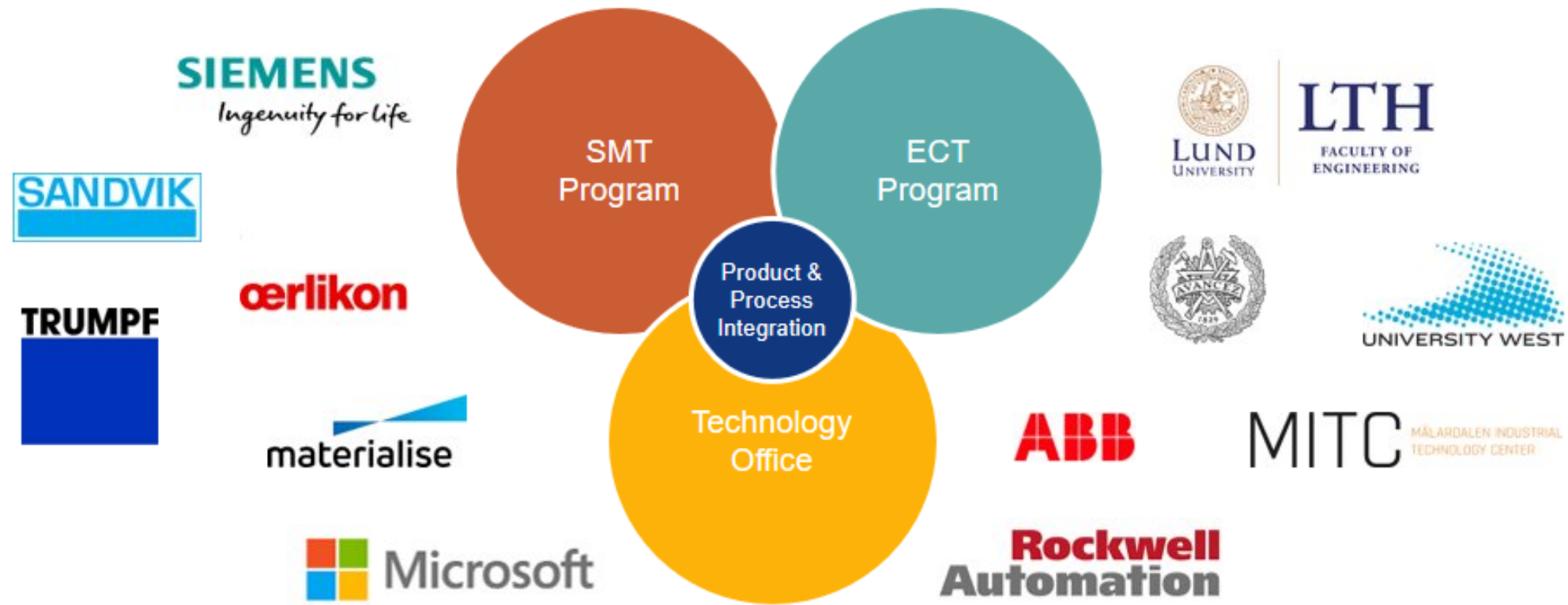
Workforce
empowerment



Sustainable
customer value

Smart manufacturing

– In collaboration with external partners



Plant simulation

– Gasketed plate heat exchangers, Lund, Sweden



Use-case

- Digital twin of the production
- Scenario analysis
- Process optimization

Impact

- Health & safety
- Quality & lead time
- Capacity & cost efficiency

Advanced performance tracking

– Brazed heat exchangers, Alonte, Italy



Use-case

- Cloud-connected sensors
- Monitor unplanned stops
- Effective information loop

Impact

- Delivery performance
- Capacity & cost efficiency

Additive manufacturing (AM)

– High speed separators, Eskilstuna, Sweden



Use-case

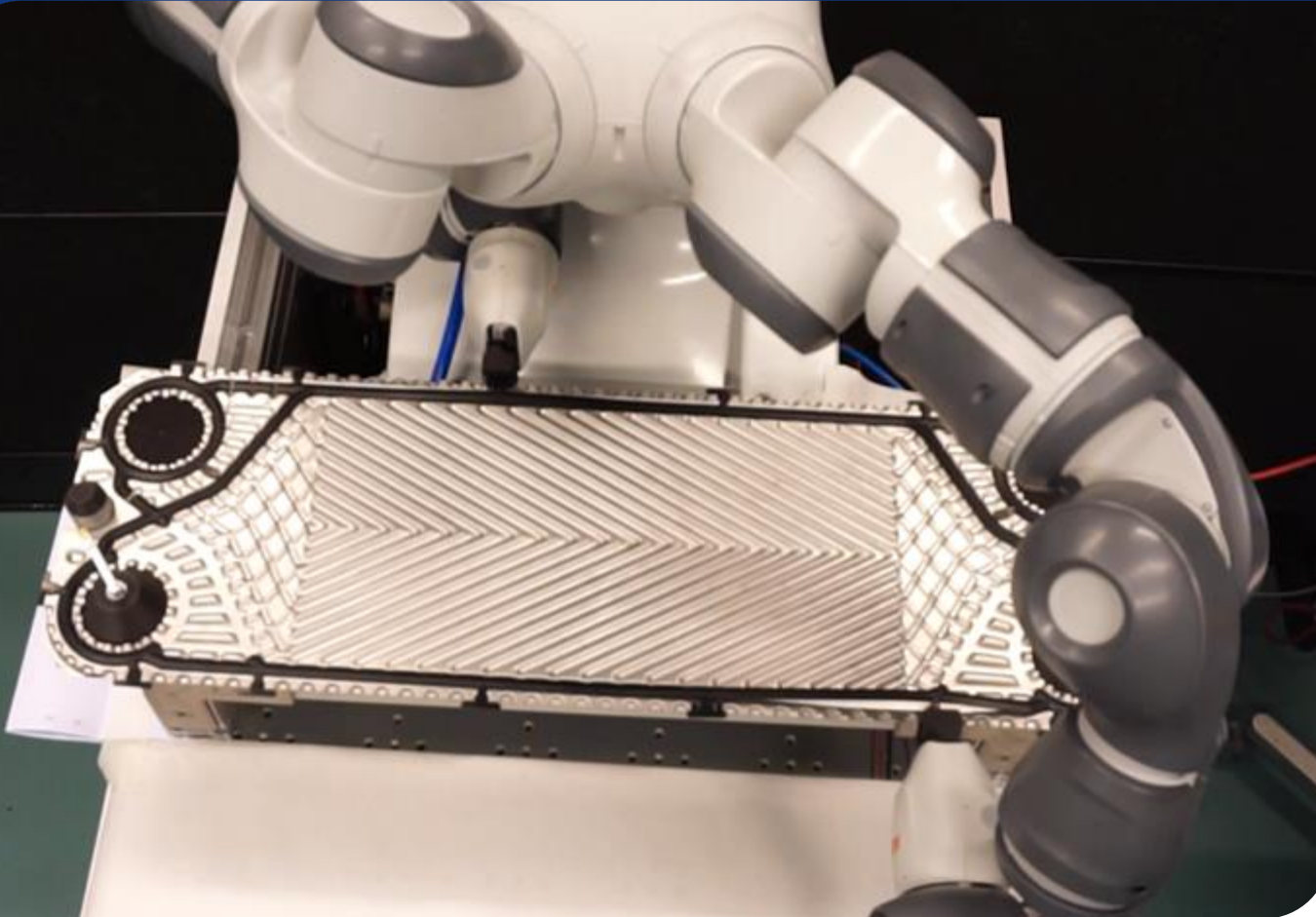
- Layer-by-layer
- Complexity for free
- Business disruption

Impact

- Lead time
- New design solutions
- Customization & flexibility

Advanced robotics

– Gasketed plate heat exchangers, Lund, Sweden



Use-case

- Industrial alliance
- Advanced sensors & machine learning
- Handling of polymeric materials

Impact

- Health & safety
- Quality & lead time
- Cost efficiency

Greenfield factory of the future

– Combining footprint and Industry 4.0 tools



San Bonifacio, Italy

Vision

- Solar panel power
- Connected and digital
- Forklift free environment

Impact

- Health, safety & environment
- Quality & lead time
- Capacity & cost efficiency

Summary

