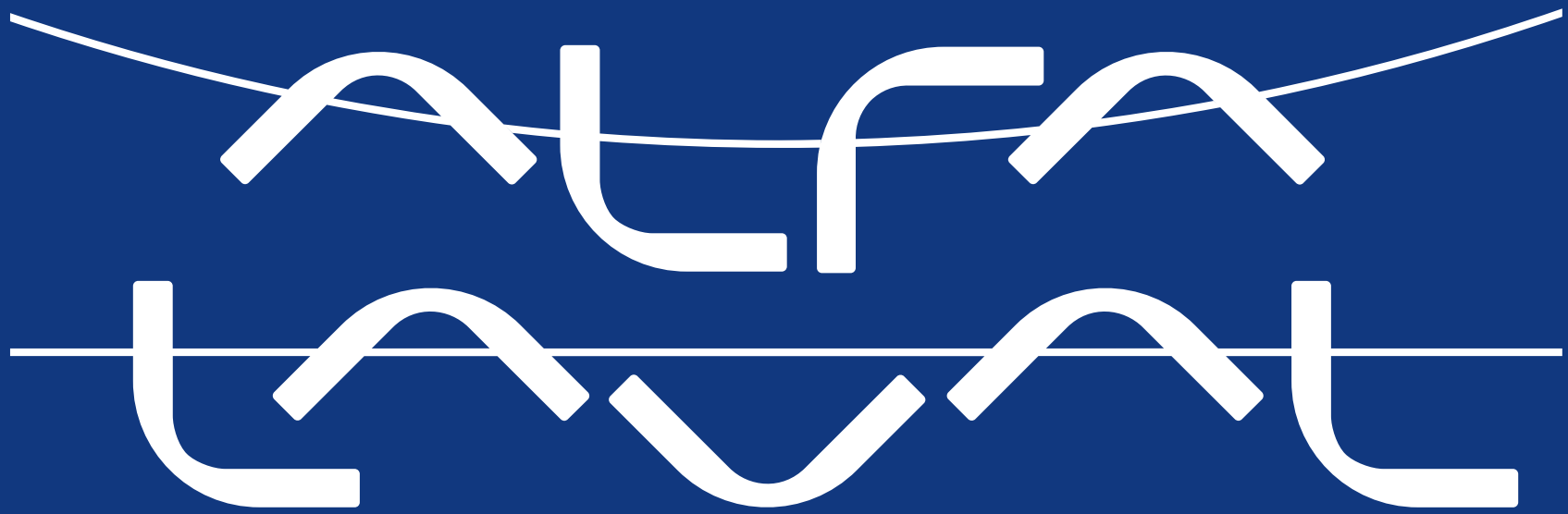
ALFA
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The footprint program & Industry 4.0

– Operations

Mikael Tydén
Head of Operations
Alfa Laval Group

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

	Wave 1		Wave 2	
Footprint	Closed	Closure Q4 2019	Closure Q2 2021	Site reduction
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

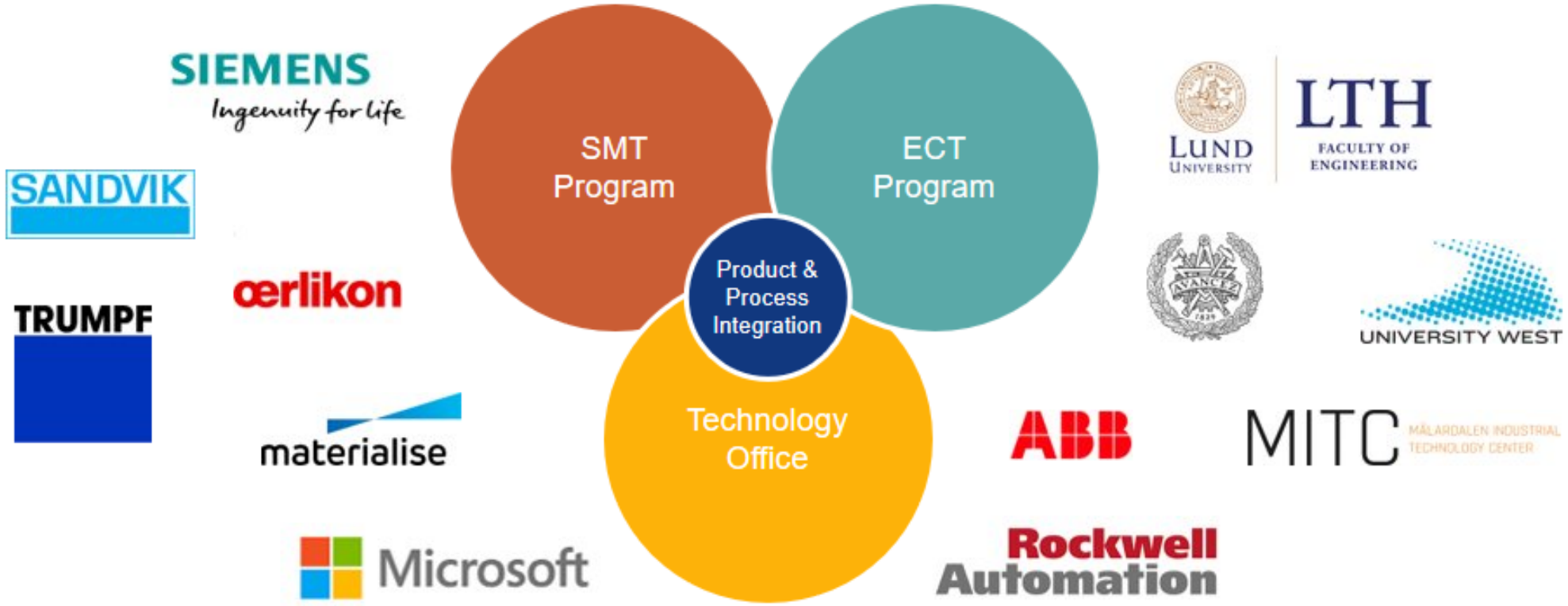
FILM
Krakow - LJUDLÖST

Taking Alfa Laval into the future

– Industry 4.0 and Smart manufacturing

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

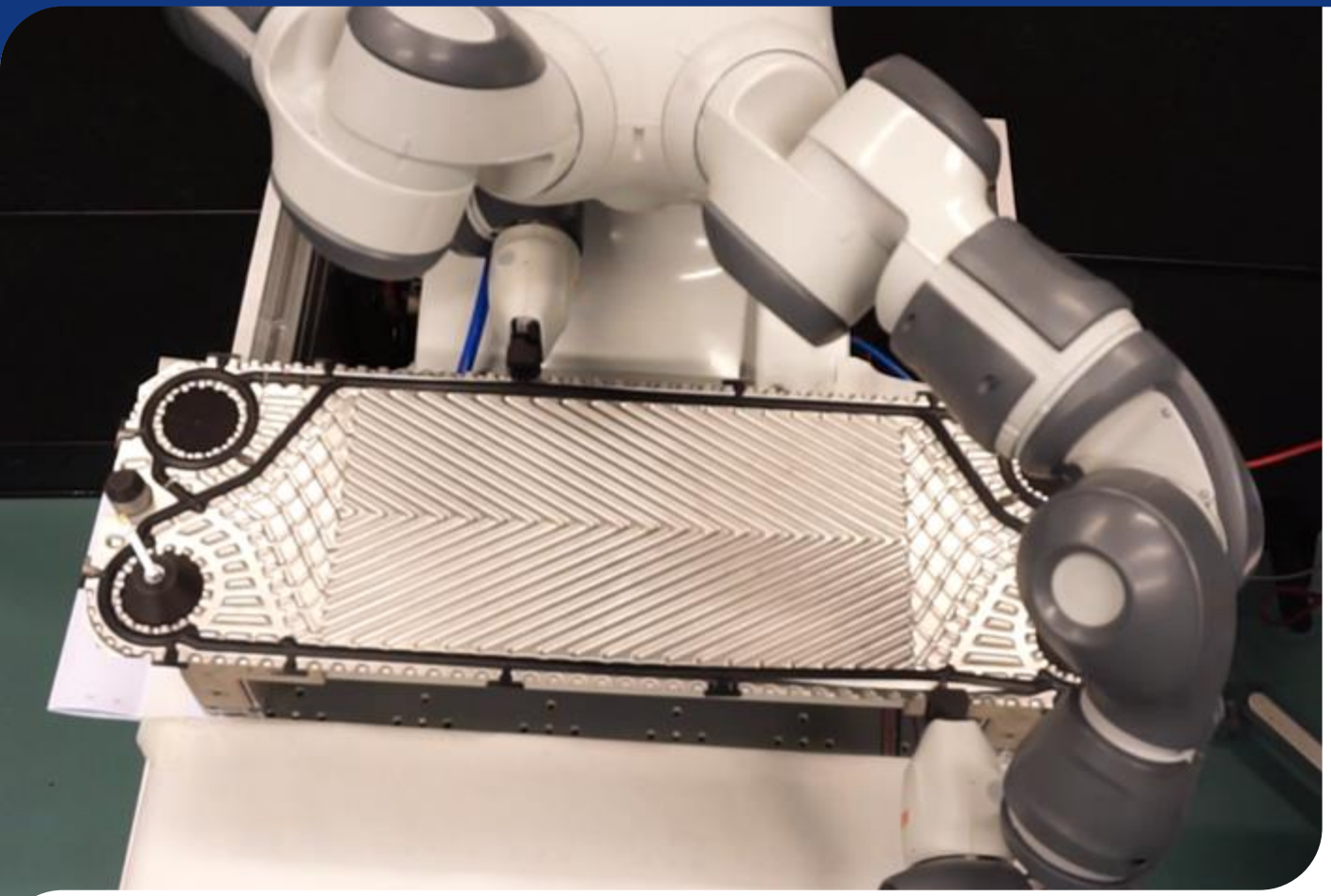
- Layer-by-layer
- Complexity for free
- Business disruption

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

FILM
Robot – med MUSIK

Greenfield factory of the future

– Combining footprint and Industry 4.0 tools

San Bonifacio, Italy

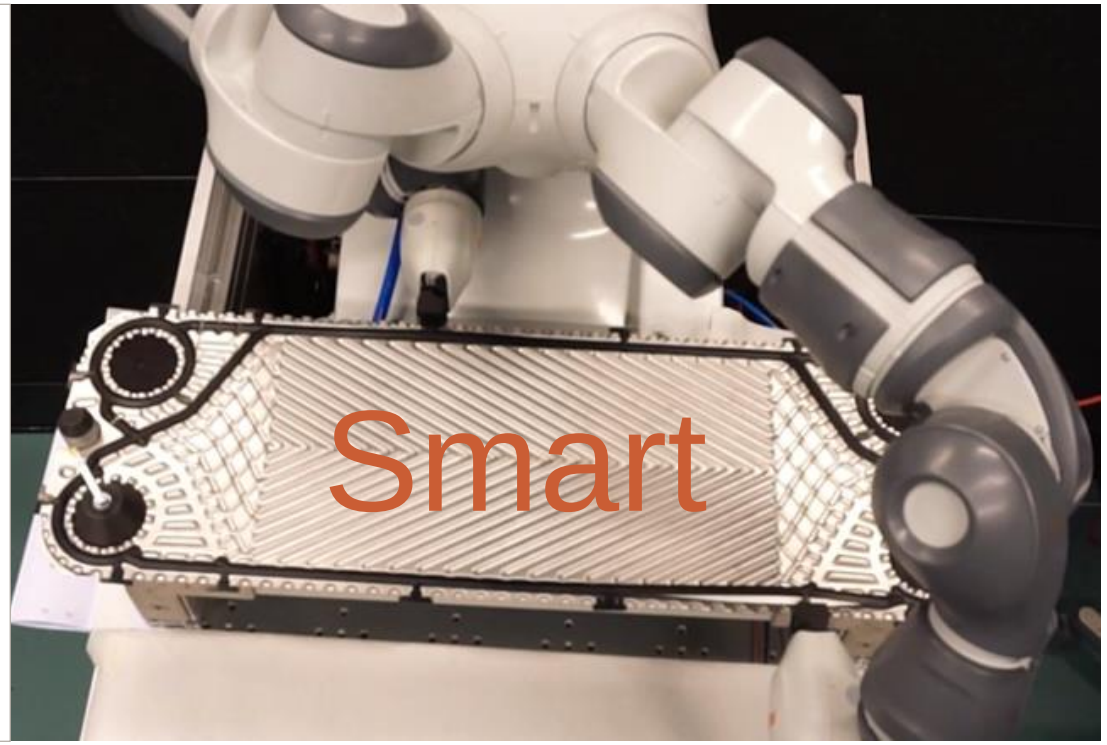
Vision

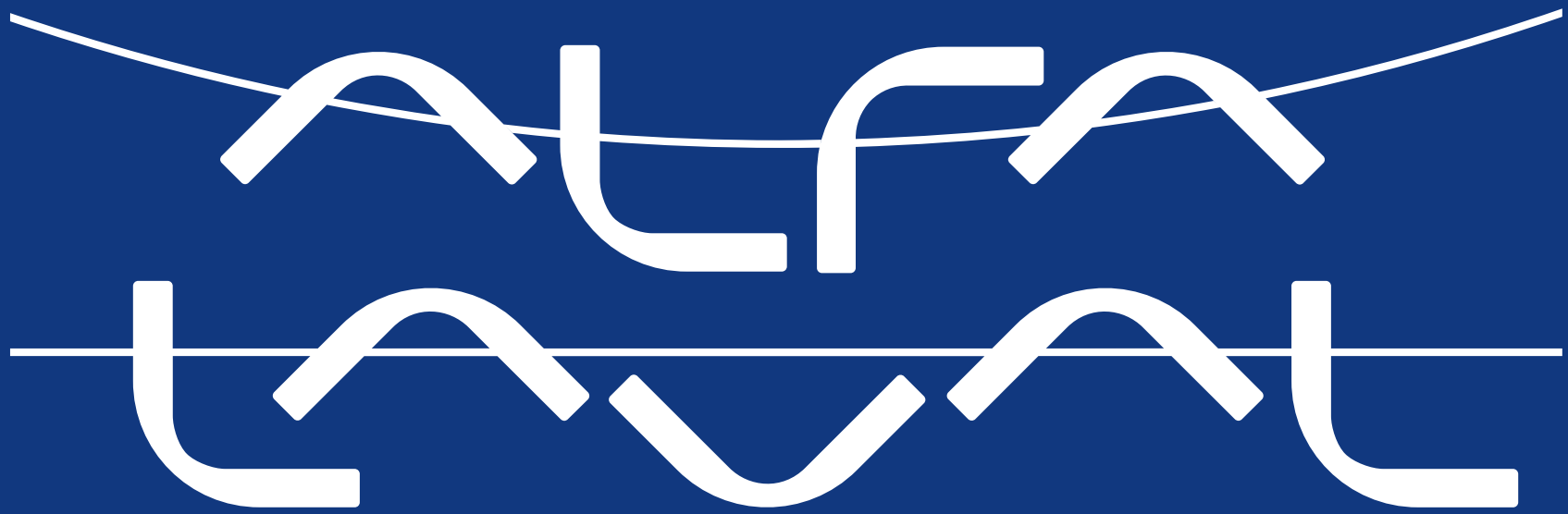
- Solar panel power
- Connected and digital
- Forklift free environment

Impact

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

Summary

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