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

<table>
<thead>
<tr>
<th>Footprint</th>
<th>Wave 1</th>
<th>Wave 2</th>
<th>Site reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed</td>
<td>Closure Q4 2019</td>
<td>Closure Q2 2021</td>
<td></td>
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<tr>
<td>Consolidation USA</td>
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<tr>
<td>Spiral heat exchanger supply chain</td>
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<tr>
<td>The Greenhouse, selected product groups</td>
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<td>4</td>
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<tr>
<td>Consolidation China</td>
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<td>Gasketed plate heat exchanger supply chain</td>
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<tr>
<td>Decanter supply chain</td>
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<tr>
<td>Consolidation India</td>
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<tr>
<td>Brazed and fusion bonded heat exchanger supply chain</td>
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<tr>
<td>Kolding hygienic fluid handling centre</td>
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<td><strong>Total</strong></td>
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</tbody>
</table>
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

SMT Program
ECT Program

Product & Process Integration
Technology Office

SIEMENS
SANDVIK
TRUMPF
œrlikon
materialise
Microsoft

ABB
MITC
LTH
UNIVERSITY WEST
UNIVERSITY WEST
LUND UNIVERSITY

Rockwell Automation
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

+20% 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

Vision
• Solar panel power
• Connected and digital
• Forklift free environment

Impact
• Health, safety & environment
• Quality & lead time
• Capacity & cost efficiency

San Bonifacio, Italy
Summary

- 20 percent

Smart