Process Technology Division

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Process Technology Division
- New organization

ENERGY
Hydro carbon based

FOOD
Food and bio renewable based

ENVIRONMENT
Water based
Critical success factors

Customer closeness

IPA know-how

Competitive solution
Food & Life Science

Orders received January – September 2014
Food & Life Science segment

- Vegetable oil
- Food solutions
- Proteins
- Brewery
- Life Science and Renewable resources
Vegetable protein
- Enrichment in food and animal feed

* Increased demand for high grade proteins.
* Shifting consumption preferences a.o. based on the high CO₂ efficiency as oppose to meat based protein

Global Soybean Production and Consumption

![Graph showing soybean production and consumption trends from 2001 to 2013.](image-url)
Starch

- World consumption grow with 3-4% annually
- Used for...
  - Ethanol
  - Sweeteners
  - Bio based chemicals
  - Feed additives - Lysine
Energy & Process

Orders received January – September 2014
Energy & Process segment

- Oil & Gas
- Petrochemicals
- Refinery
- Power
- Inorganic, Metals & Paper
Air-cooled heat exchangers
- For the process and energy industries

Alfa Laval ACE air cooled Heat Exchangers
Alfa Laval Olmi air cooled Heat Exchangers
Alfa Laval Niagra wet surface air coolers (WSAC)
Alfa Laval finned coil air cooled Heat Exchangers
Enhanced Oil Recovery (EOR)
Heavy crude oil dehydration

- Heavy crude oil dehydration i.e. separation of water and solids
- Mechanical separation replaces static and/or electrostatic separation

High speed separator OFX20
Water & Waste treatment

Orders received January – September 2014
Unreliable access to fresh water (constant or seasonal). Water stress:

<table>
<thead>
<tr>
<th>Stress Level</th>
<th>1995</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10% Low stress</td>
<td></td>
<td></td>
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<tr>
<td>10-20% Medium stress</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-40% High stress</td>
<td></td>
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<tr>
<td>&gt;40% High stress</td>
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</tbody>
</table>

Water withdrawal as a percentage of total available water:
- More than 40%: Orange
- From 20% to 10%: Light blue
- From 40% to 20%: Medium blue
- Less than 10%: Dark blue

Source: UN Environment Program
Industrial water & waste
- Alfa Laval solutions

Water recovery for reuse and water conditioning for process

- Ultra filtration membranes
- Membrane Bio Reactor
- ISO disc filter
- Evaporation systems
Industrial water & waste
- Example of water re-use: Bodegas Viña Ijada.

Wastewater treatment with Alfa Laval’s MBR enabling water effluent used for irrigation

Water from conventional treatment (left) vs. water treated with AL's MBR (right)
Orders received January – September 2014
Importance of Service
- Life cycle management – cooperation Service and capital sales

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Alfa Laval Capital Sales

Alfa Laval Service
In conclusion…
- Process Technology Division

- Structural growth generates new opportunities in the food market.
- Separation and acquired air heat exchanger technology creates opportunities in the oil and gas market.
- Water quality and scarcity will create opportunities in many markets.