The Electrolux approach...

• How we executed a Modularization Strategy impacting 80% of our Business
  – We did not start with a specific design, not a project, not limited to one function.

• How we achieved a quick financial impact
  – We wanted to show early financial results of Modularization

• How we managed to drive and govern our continued journey on a day to day basis.
  – The change from a strategic change program to be a strategy embedded in all business and all functions.

Start at the Top......
Electrolux Group

- Net sales SEK 121 bn
- Sales in 150 countries
- People 61,000 in 60 countries
- Products +50 million Sold/year
A history of innovations, acquisitions and strong brands

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1912</td>
<td>Lux 1 – first vac</td>
</tr>
<tr>
<td>1919</td>
<td>AB Elektrolux founded</td>
</tr>
<tr>
<td>1925</td>
<td>World’s first absorption fridge</td>
</tr>
<tr>
<td>1959</td>
<td>Round jar bench dishwasher</td>
</tr>
<tr>
<td>1962</td>
<td>Elektro Helios (Sweden)</td>
</tr>
<tr>
<td>1974</td>
<td>Eureka (USA)</td>
</tr>
<tr>
<td>1984</td>
<td>Zanussi (Italy)</td>
</tr>
<tr>
<td>1986</td>
<td>Frigidaire (USA)</td>
</tr>
<tr>
<td>1991</td>
<td>Lehel (Hungary)</td>
</tr>
<tr>
<td>1994</td>
<td>AEG (Germany)</td>
</tr>
<tr>
<td>1997</td>
<td>Refripar (Brazil)</td>
</tr>
<tr>
<td>2000</td>
<td>Email – Westinghouse (Australia)</td>
</tr>
<tr>
<td>2001</td>
<td>World’s first robotic vac</td>
</tr>
<tr>
<td>2004</td>
<td>First Ergorapido</td>
</tr>
<tr>
<td>2012</td>
<td>Grand Cuisine, first professional kitchen for consumers</td>
</tr>
<tr>
<td>2013</td>
<td>Sous-vide oven</td>
</tr>
<tr>
<td>2015-2016</td>
<td>Anova, Vintec, Masterpiece tilted blender, Olympic Group (Egypt), CTI (Chile)</td>
</tr>
</tbody>
</table>

Key acquisitions:
- AB Elektrolux founded
- Elektro Helios (Sweden)
- Eureka (USA)
- Zanussi (Italy)
- Frigidaire (USA)
- Lehel (Hungary)
- AEG (Germany)
- Refripar (Brazil)
- Email – Westinghouse (Australia)
- Olympic Group (Egypt)
- CTI (Chile)
- Anova, Vintec, Masterpiece tilted blender
Product overview  ~80% of our business in Major Appliances
The Electrolux strength....

- ‘Glocal’ presence
- Scandinavian heritage
- Professional legacy

- Consumer insight
- Product breadth

- 70%
Competitors are gearing up for aggressive growth – The Global Top 7 in 2017

REGIONAL
- Whirlpool
- B/S/H/

KOREANS
- Samsung
- LG

CHINESE
- Haier
- Midea

All have ambitions to become...

#1...
in household appliances worldwide

Electrolux
Electrolux had an era of massive footprint optimization...

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plants</strong></td>
<td>• 17 closures</td>
<td>• 6 factories downsized</td>
</tr>
<tr>
<td></td>
<td>• 6 factories downsized</td>
<td>• 10 new factories</td>
</tr>
<tr>
<td></td>
<td>• 9 acquired factories</td>
<td>• 9 acquired factories</td>
</tr>
<tr>
<td><strong>Total Capacity</strong></td>
<td>46 M units</td>
<td>52 M units</td>
</tr>
<tr>
<td><strong>Share of LCC Capacity</strong></td>
<td>28%</td>
<td>64%</td>
</tr>
<tr>
<td></td>
<td>• Approximately 35% of production moved</td>
<td></td>
</tr>
<tr>
<td><strong>Capacity Utilization</strong></td>
<td>77%</td>
<td>66%</td>
</tr>
<tr>
<td></td>
<td>• 10,000 employee reduction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 7,000 new employees hired</td>
<td></td>
</tr>
</tbody>
</table>
Global Industrial Operations
Key facts 2016

- **50,000** employees
- Best safety record in the industry
- World-class lean manufacturing program
But... competition and consumers continue to change...... New Strategic Change needed.

- Cost
- Quality
- Capital Footprint optimization
- R&D consolidation
  - **Modularization 1.0**
  - Functional alignment
  - Product Lines

**Global Operations 1.0**
2010-2015

- Cross functional optimization/integration
  - **Modularization 2.0**
  - Internal Productivity
  - Automation
  - Consumer Quality

**Global Operations 2.0**
2015-2020
Modularization as company strategy... decided 2010...........and inspired by:
Modularization – simple explanation

The diagram illustrates the relationship between the number of product variants and the number of parts. As the number of parts increases, the number of product variants decreases, indicating a trade-off between complexity and diversity.
Electrolux 20/20 Process – step 1

**Alternative approaches to defining a modular structure**

- **Component focus**
  - Mathematically derive modules by clustering parts
- **Function focus**
  - Clustering functionalities to reasonable aggregation level and transfer into ideal product design

**Expert interview on product architecture**

- **Product**
- **Module**
- **Sub-module**

**Breaking down basic function into sub-functions which can be covered by modules**

- **Bottom-up**
- **Top-down**

**The modular structure was defined through a top-down component based approach**

- Deriving the modular structure in a reasonable time frame
- Focus on quick derivation of tangible measures
- Discussions based on existing product architecture
- Flexible for future trends

**Source:** Global Modularization Project
Electrolux 20/20 Process – step 2

Electrolux 20/20 Process: We take out a team of our 20 best people within R&D, Purchasing, Manufacturing, Design, Product Mgmt and Quality. This team report to Modularization for 20 weeks with the task to establish the best Module Area book for Electrolux. 20/20 Process -> 20 people for 20 weeks.
Electrolux 20/20 Process – step 3

- Documents necessary variation and standardization per market segment and covers for future market requirements

Variant management

Documents desired lifecycle strategy per module/part

Lifecycle management

Documents necessary prerequisites (standard interfaces and/or space requirements)

Supplier management

Documents necessary design changes to optimally support purchasing strategy

Documents how to leverage global strength by optimizing cross-regional purchasing strategy per module

Process Steps

Clear Modular structure | Fact - Analyses deck | Set Strategic direction | Modular strategy & Actions

Source: Global Modularization Program
Modular strategy as a cross-functional approach to achieve superior products that best serve consumer needs and leverage best available technology at lowest prices.
That's how we established the foundation for our Modularization (MOD 1.0) and got control of our complex set-up through MA.

NEW MODULAR STRUCTURE       FIT with RUNNING BUSINESS

**Structural levels**

<table>
<thead>
<tr>
<th>Level</th>
<th>Structural element</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Product line</td>
<td>Food preservation</td>
</tr>
<tr>
<td>2</td>
<td>Product group</td>
<td>Refrigerator</td>
</tr>
<tr>
<td>3</td>
<td>Module area</td>
<td>Door</td>
</tr>
<tr>
<td>4</td>
<td>Module</td>
<td>Outer door</td>
</tr>
<tr>
<td>5</td>
<td>Generic component</td>
<td>...</td>
</tr>
<tr>
<td>6</td>
<td>Article</td>
<td>...</td>
</tr>
</tbody>
</table>

- Complexity Addressed

**43 MODULE AREAS**

xx.xxx PNC

xxx.xxx ANC
## Module 1.0 plans completed - 43 Module Area Books – execution of actions

<table>
<thead>
<tr>
<th>Cross product line</th>
<th>Food preparation</th>
<th>Food preservation</th>
<th>Dish care</th>
<th>Fabric care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Accessories &amp; Consumables</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Electrics &amp; Electronics</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Packaging</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product line specific, but similar</th>
<th></th>
<th></th>
<th>Door</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product line specific</th>
<th>Cavity</th>
<th>Interior</th>
<th>Tub</th>
<th>Drive train</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling system</td>
<td></td>
<td>Internal air flow s.</td>
<td>Basket/Racks</td>
<td>Hydraulics</td>
</tr>
<tr>
<td>Hob</td>
<td></td>
<td>Cooling system</td>
<td>Hydraulics/Filtration</td>
<td>Wash group</td>
</tr>
<tr>
<td>Lid</td>
<td></td>
<td>Ice and water</td>
<td>Spray system</td>
<td>Work top</td>
</tr>
<tr>
<td>Compartment</td>
<td></td>
<td></td>
<td></td>
<td>Heat pump</td>
</tr>
<tr>
<td>Control II</td>
<td></td>
<td></td>
<td></td>
<td>Drying group</td>
</tr>
</tbody>
</table>

| Module Areas | 11 | 9 | 9 | 11 |

* 40 PL Books + 3 XPL Books
Modularization 1.0 Summary

500+ people from all Sectors, Product Lines and Functions – 20/20 Process

Major Yearly savings by 2016, plus increased flexibility, less complexity, lower CAPEX and improved performance

40 Module Areas Books signed (43 incl XPL)

>1.800 activities delivers the result
Great result….Follow the money (tracking of activities)

Major cost savings and complexity reductions from Modularization was communicated to the capital market in 2011-2013

We have identified a greater potential within modularization which will generate higher savings

<table>
<thead>
<tr>
<th>Module</th>
<th>Annual purchasing spend (Percent of total spend, 100% = SEK 1,344m)</th>
<th>Impact on complexity (From … to)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical structure</td>
<td>41</td>
<td>11-10 Mechanical structure concepts</td>
</tr>
<tr>
<td>Glass pack</td>
<td>35</td>
<td>94-16 Glass width classes</td>
</tr>
<tr>
<td>Handle</td>
<td>12</td>
<td>58-5 Handle mounting positions</td>
</tr>
<tr>
<td>Hinge</td>
<td>9</td>
<td>11-2 Hinge concepts (bodies)</td>
</tr>
<tr>
<td>Door lock</td>
<td>3</td>
<td>20-1 Door locks</td>
</tr>
<tr>
<td>Total door</td>
<td>100</td>
<td>50-10 Door concepts</td>
</tr>
</tbody>
</table>

Structural savings SEK 150 million
Extend the Modularization scope from Module Area to Modular Products and Modular Manufacturing.

**Product Cost** savings on Direct Material and Labor through **design for assembly**

**Modularized products** allow optimized manufacturing setup with more automation and innovation enhancement

**Late customization** allows more manufacturing flexibility, faster delivery to customer
Modularization...
.....Starts and ends with the consumer
Outlook 2014: If we do nothing, we won’t achieve enough cost efficiency...

- Modularization 1.0 finished
- Factory Footprint work finished
- Labor inflation
The solution: The Modularization 2.0 Model

From cost saving to market-based operations efficiency

MOD 1.0

- Product cost savings (direct material)
- Complexity reduction

MOD 2.0

- Market needs
- Product
- Manufacturing
- Customer delivery

- Product cost savings (direct material and labor)
- Automation • Design for assembly
- Innovation enhancement
- Faster supply in a digital age

Electrolux
Based on the results from Modularization so far we committed to “find the needed cost-savings”
...and include new objectives on Innovation, Quality, Speed enabled by GLOBAL Modularization

Benefits of scale:
- Modularization
- R&D
- Purchasing
- Manufacturing
- Quality
Electrolux 20/20 Process – step 1

MOD 2.0: Create a Modular Product Architecture.

Key interface dimensions

- Bellow depth
- Damper placement
- Drum diameter
- Etc.

A few interface dimensions are key to the products

Key interfaces

- Bellow/front panel
- WG/cabinet

Optimized modules (1.0) connect to a final product through well defined and stable interfaces

Architecture variance

- Architecture 1
- Architecture 2
- Architecture 3

Modules are reused across product architectures to enable global scale
Electrolux 20/20 Process – step 2

Optimize the Modular Product Architecture...how to get fewer and better Product Architectures

- Reduction of architectures
- Module cost/performance
- Stabilized product interfaces
- Optimized production setup

- Complexity reduction
- Clear performance steps
- Architecture and module complexity reduction
- Optimized module cost and performance and clear performance steps

- Architecture and module complexity reduction
- Optimized module cost and performance and clear performance steps

- By stabilizing interfaces across architectures it will be possible to improve module sharing
- By adapting a modular assembly approach assembly time can be reduced
- Module manufacturing set-up creates the flexibility and speed needed to serve markets in a digital century
Electrolux 20/20 Process – step 3

Create best Modular assembly and additional labour cost savings
Modularization 2.0 and Automation are key priorities for productivity

- Short-term push on smart automation
- Long-term reduction in number of architectures
- Increased consumer choice

[Diagram showing automation and product evolution from manual to automated processes with traditional and modular product options]
Modularity 2.0

..Holistic approach to achieve Benefits
Product:
Modularization creates a new efficient way to configure products

**Module Variants**
- Cavity
- Body
- Compartment
- Cooling
- Control panel
- Hob
- Door

**Customer Variants**
- Pyro
- Fan
- Storage
- Cooled door
- Backguard
- Induction
- Cooled
- Full glass
- Standard
- Shell
- Grill
- No cooling
- Front control
- Radiant
- Solid
- Steel inner
- No compartment
- Integrated control
- Gas

**Interfaces**

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Electrolux
### Module Variants

<table>
<thead>
<tr>
<th>Cavity</th>
<th>Body</th>
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<th>Cooling</th>
<th>Control panel</th>
<th>Hob</th>
<th>Door</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pyro Shell</td>
<td>Standard Shell</td>
<td>Grill</td>
<td>No cooling</td>
<td>Front control</td>
<td>Solid Steel inner</td>
<td>Full glass Door</td>
</tr>
<tr>
<td>Fan Storage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas Pyro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas Fan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Customer Variants

- Cooled
- Radiant
- Induction
- BG + Front control
- Radiant
- Full glass
- Steel inner
- No compartment
- Integrated control
- Standard Gas
- Gas Pyro Fan
- Gas Standard

Product: Modularization creates a new efficient way to configure products.

---

*Image source: Electrolux*
The result: Innovation based on Modularization….faster

>2 million units in 3 years for 7 market regions

Mass front load washing machines and dryers with same product architecture, same manufacturing principles, same modular exterior and interior concepts, differentiated dimensions, design elements and offer line-up
Great result….Follow the money (tracking of activities)

Modularization 2.0 incl. Automation is delivering about twice the saving impact of Modularization 1.0

Source: Global operations, modularization team
Journey Continues

MOD 1.0 & MOD 2.0 Governance
After 20/20 Process and all “Books” → Governance and Execution of Activities and Projects

Module Area Books. MOD 1.0

Architecture Books. MOD 2.0

Activity Program and FU.
Projects and activities specified with Timing and deliverables

Modularization Governance

MAB/ARB Modification Process
Special for MOD 2.0 Modularization Financial Tracking
- Integrated Financial Plan (IFP)

**Cost category view**
- DM
- DL
- Warranty
- Other CC
- DfA
- Total

**Sector view**
- EMEA
- NA
- LA
- APAC
- Total

**Product line view**
- Food Pres
- Dish Care
- Fabric Care
- Food Prep
- Total

IFP yields breakdown by:
- Cost category view
- Sector view
- Product line view
Modularization 1.0 to 2.0...
From cost saving to market growth and market agility
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Start at the Top......Follow the Money
Movie & questions