AGENDA

- Brief introduction to Pöyry
- Engineered Lumber Trends
BRIEF INTRODUCTION TO PÖYRY
Pöyry is an international consulting and engineering company, dedicated to serving clients across the world’s energy and industrial sectors

- 6,000 experts
- 10,000+ projects delivered annually
- Solid track record in forest industry
- Leading hydro and power market engineers
- EUR 575 million net sales in 2015
PÖYRY – SERVICES FOR ENTIRE BUSINESS LIFECYCLE

Strategic Advisory
- Management Consulting
- Operational Excellence

Engineering Services
- Technical Consulting
- Conceptual Design
- Basic Engineering
- Detailed Engineering

Project Implementation
- Site Supervision
- Project / Construction Management
- EPCM
- EPS/EPC

Operations Support
- Operational Improvement
- O&M Management
- Outsourced Operations

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ENGINEERED LUMBER TRENDS

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# PÖYRY MANAGEMENT CONSULTING – SERVICE OFFERINGS

## Corporate and Business Strategy
- Portfolio strategy
- Growth strategies
- Business strategies and business plans
- Business model development
- Scenario analysis
- Risk management
- Environmental strategies
- Market entry strategies
- Cooperation strategies

## Resource and Technology Strategies
- Resource base valuations and development
- Technology mapping
- Technology benchmarking
- Technology options evaluation
- Technology strategies
- R&D portfolio strategies
- Technology acquisitions

## Operational and Organizational Excellence
- Performance improvement
- Operational and organizational benchmarking
- Corporate restructuring
- Organizational design
- Business transformation
- Change management
- Post merger integration
- Manufacturing strategies
- Energy efficiency
- Asset Management
- Maintenance Strategies

## Market Insights and Modeling
- Market analysis
- Market forecasts
- Demand, supply, and cost analysis
- Price projections
- Industry cost curves
- Market design and modeling
- Market regulatory frameworks
- Market scenarios

## Sales and Supply Chain Strategies
- Supply/market analysis
- Pricing strategies
- Contract negotiations
- Supply chain optimization
- Sourcing strategy formulation
- Supplier assessments
- Transfer Pricing

## Investments and M&A
- Acquisitions
- Divestments
- Asset valuations
- Business valuations
- Project pre-feasibility / feasibility assessments
- Due Diligence (strategy, business, technical, environmental)
- Business valuation vs. Asset valuations

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PÖYRY MANAGEMENT CONSULTING

Locations in 4 Continents

- New York
- Atlanta
- São Paulo
- Curitiba
- Düsseldorf
- Helsinki
- London
- Madrid
- Milan
- Moscow
- Munich
- Oslo
- Oxford
- Paris
- Stockholm
- Vienna
- Zurich
- Dubai
- Shanghai
- Singapore
- Jakarta

4 continents

380 consultants

55+ years of experience

4 Focus areas:
- Forest Industry
- Energy
- CLIENT FOCUS
- ENGINEERED LUMBER TRENDS

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ENGINEERED LUMBER PRODUCTS

- Logs
- Sawn
- Veneer
- CLT
- Glulam
- LVL
ENGINEERED LUMBER PRODUCTS

It is all about engineering the use of wood material to meet the requirements of high value applications and replace traditional wood, concrete, brick and steel products in construction

CLT
- “Cross Laminated Timber”
- Large panels made of sawnwood
- Substituting concrete elements
- Wall & floor structures
- Wooden multi storey buildings

Glulam
- Sawnwood laminated to straight and curved beams
- Alternative for large steel & concrete structures
- Residential, non-residential and infrastructure construction

LVL
- “Laminated Veneer Lumber”
- Thin veneers glued together grain parallel to long direction of beam
- Versatile uses: studs, I-joists, large structures, pre-fab elements
## EUROPE VS NORTH AMERICA

<table>
<thead>
<tr>
<th></th>
<th>Population</th>
<th>GDP bln $</th>
<th>GDP/capita</th>
<th>Forest (Mha)</th>
<th>Forest (%)</th>
<th>ha/capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America</td>
<td>355 M</td>
<td>19,200</td>
<td>54,000</td>
<td>720</td>
<td>37.6%</td>
<td>2.0</td>
</tr>
<tr>
<td>Europe incl. Russia</td>
<td>740 M</td>
<td>22,000</td>
<td>29,500</td>
<td>1,117</td>
<td>50.6%</td>
<td>1.5</td>
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<tr>
<td>Europe excl. Russia</td>
<td>600 M</td>
<td>22,050</td>
<td>33,600</td>
<td>228</td>
<td>39.9%</td>
<td>0.35</td>
</tr>
<tr>
<td>EU 28</td>
<td>510 M</td>
<td>18,500</td>
<td>36,300</td>
<td>181</td>
<td>43.0%</td>
<td>0.36</td>
</tr>
<tr>
<td>Eurozone</td>
<td>340 M</td>
<td>13,440</td>
<td>39,700</td>
<td>120</td>
<td>44.8%</td>
<td>0.35</td>
</tr>
</tbody>
</table>
ENGINEERED LUMBER MARKETS

The CLT market is in early stage of development both in Europe and N-America. Glulam and LVL are more mature products and their total relative consumption in total closely similar (~0.005-0.006 m$^3$/person) in NA and Europe (Excl. Russia).

- New product
- Growing capacity
- 30-35 producers in Europe, 3 in NA

- Well established in NA
- New producers and capacity in Europe

- Maturing market in Europe
- Relatively small in NA
MARKET TRENDS OF ENGINEERED LUMBER

In Europe, the market of engineered lumber products still grows faster than construction, whereas in North America they have become mature products exposed to market cycles.
EUROPEAN ENGINEERED LUMBER PRODUCTION

Austria, Germany and Finland are the leaders of engineered lumber in Europe
Opportunities for production closer to markets or alternative raw material sources?

Overview of European construction

In the map, in national level measured construction expenditure is allocated based on population of smaller statistical areas to highlight the areas of intense construction activity.
MARKET PENETRATION – EUROPE & N-AMERICA

Varying wood resources and construction practices have also lead to different consumption patterns within Europe. Glulam is more common than LVL throughout the Europe, whereas the situation is reverse in both US and Canada.
CONCLUSIONS

- Use of engineered wood products in Europe has grown much faster than construction activity – Engineered wood products have clearly gained market share from both traditional wood products and other materials.

- Variable consumption patterns of different products in different European countries indicate further potential for growth in selected markets.

- The industry has been able to accelerate growth in the use of engineered wood products with focused marketing campaigns, e.g. by Austrian proHolz accelerating growth of glulam market in Italy.

- CLT is still in early stage of development and a major growth opportunity both in North American and Europe. It can also have a significant impact on sawnwood demand. E.g. 10% market share gain in residential construction in Germany would increase the demand of sawnwood by 1.5-2 Mm$^3$ or by 300-400 million EUR.
The leading advisor to the world’s energy, forest and bio-based industries. Clients choose us for the Sharpness of our Insight, deep industry expertise and proven track record – because results count.

Pöyry Management Consulting