IR-DAY2017
Forest Machine Business

September 15, 2017
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1. Global production of industrial roundwood = 1,850 mil. tons in 2015. **Will grow 1.7% annually.**
   Estimation = 2,190 mil. tons in 2025. ※1
   • Growth rate by product:
     • Sawlogs & Veneer logs; +2.3% (Global increase in housing starts)
     • Pulpwood; +1.4% (Increase in paper production in developing countries. Developed countries ➔ decreasing)
   • Growth rate by region:
     • Europe; +1.7%, North America; +1.9%, Asia; +1.5%, Latin America; +1.7%, Oceania; +2.2%
2. Forestry mechanization ratio by each region: Europe/NA/Oceania; stable Asia; increasing
3. Forest machine demand = JY 520 B in 2016. will grow 3.3% annually.
   Estimation = JY 690 B in 2025. ※2

※1 Source: Food and Agriculture Organization of the United Nations (FAO), Komatsu estimate, ※2 Source: Freedonia, Komatsu estimate
• International pulp price is stable in the past decade except for Lehman aftermath.
  • Consumption increases in emerging countries, decreases in developed countries.
  • US housing starts has recovered to pre-Lehman level.
<table>
<thead>
<tr>
<th>Method</th>
<th>Details</th>
<th>Characteristics</th>
</tr>
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<tbody>
<tr>
<td>(1)CTL</td>
<td>Felling, Delimbing, Bucking Extracting from forest, Loading to trailer Transporting</td>
<td><strong>Felled trees are delimbed and cut to length in the forest and transported to near public road.</strong> Machine attachment (harvester head) fells, delimbs, bucks (cut to length), and debarks trees. Extract logs to public roadside by forwarder.</td>
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<tr>
<td>(2)FTL</td>
<td>Felling, Extracting, Delimbing, Bucking Collecting, loading Transporting</td>
<td><strong>Felled trees are extracted with full tree length. Trees bucked and processed in a different area.</strong> Machine attachment (felling head) fells trees and skidder extracts trees with branches and barks. Skidding usually damages ground and young trees. This method has been developed in North America and is able to fell trees in large volume in a short time.</td>
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### History of Komatsu Forest Machine Business

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<tbody>
<tr>
<td><strong>Sweden</strong> KFAB</td>
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<tr>
<td>2004 Komatsu acquired Partek Forest (Valmet)</td>
<td>2011 Brand name Valmet → KOMATSU</td>
<td>2012 Acquired Harvester head OEM Log Max</td>
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<tr>
<td>1961 Umea Mechaniska</td>
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<tr>
<td>1997 Acquisition by Partek</td>
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<td><strong>N. America</strong> KAC</td>
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<td>1979 Timbco</td>
<td>2009 Production &amp; Development moved to Chattanooga from Shawano</td>
<td>2011 Brand name changed</td>
<td>2014 Forwarder M/C 2015 Harvester M/C</td>
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<tr>
<td>2000 Acquisition by Partek</td>
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<td><strong>Komatsu</strong></td>
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<td>H/E C/T</td>
<td>2012 PC200F-8 harvester</td>
<td>(KDB)</td>
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<td>KFAB 350 head license production (2007-)</td>
<td></td>
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Komatsu Forest AB: Net Sales

Million euro

'04 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16
Forest machines widely used in Northern Europe

**Wheeled harvester**
Felling tree and buck tree to make logs on the site. Max 800mm diameter.

**Forwarder**
Extracting logs after bucking tree from site to public roadside.
Max load: 20 tons
Average traveling distance: 200 to 300 m

For reducing damage of ground, the machine equip several tire (Max 8 wheels) reducing ground pressure.
Forest machines widely used in North America

Feller buncher
Felling trees on the bottom and bunching several trees with felling head.

Skidder
Extracting full length trees skidding on the ground.

- High production extracting several trees at the same time.
- On the other hand, skidding trees might damage ground.
Forest spec machine based on Excavator

PC200F-8M0 Harvester (Brazil)

PC138US-10 Harvester (Japan)

PC130F-7 Feller Buncher (Indonesia)

PC138US-10 Grapple (Japan)

PC130F-7 Harvester (Indonesia)

PC130F-7 Swing Yarder (Indonesia)

PC300-8 Swing Yarder (Indonesia)
ICT by Komatsu Forest (MaxiXplorer, MaxiFleet, PROACT)

Machine, Machine & Head, Head

Control System

Visualize, Optimize, Assist & Report

Information Cloud
Machine Data Reports & Production Data Reports, KPI, GIS Maps, Remote Control & Access,

Service Provider (Komatsu)

Service Product
Inspection, Maintenance, Training & Follow-Up
(Maintenance contract for every 500-750 hours)

MaxiXplorer

MaxiXplorer PROACT 2.0

Link

Setting, Production, Machine data

Operator, Machine Owner, Forest company (and Komatsu)

Service Provider/Technician, Operator, Machine owner (and Komatsu)
Focusing on **forest machine business** as core business following after construction and mining equipment and **expand the business further**

1. **Direction of Komatsu Forest Machine Business (Basic Concept)**

   (1) **Sales increase of existing products**
   - **CTL product**
     - Development of harvesters and forwarders, KFAB as a core
   - **FTL product**
     - Development of Dantotsu product in North America as a main development center

   (2) **Innovation and new field**
   - Expanding solution business
     - Aftermarket business
     - Promoting “Smart forestry” (Utilizing Kom-Connect)
     - Getting into silviculture machine business

   (3) **Promoting mechanization in strategic markets**
   - Mechanization in large-scale plantations
     - Brazil; Retain customers by service contract
     - Indonesia; Collaborate with distributor and establish benchmark for other Southeast Asia countries
   - Promoting mechanization in Japan
     - Increase product line

2. **Forest machine sales**

   Base on mid-term business plan, **Sales target in FY18 = 100 billion yen**
   
   \[1€=¥130 \text{ basis}\]