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Better economics by upgrading bandsaw mills – focus on tool resharpening

Agenda
- Introduction of VOLLMER
- Case studies with focus on respective tool treatment:
  #1 Orvis, Japan  
  (Quad & twin band saw line)
  #2 Otto Lädrach AG, Switzerland
  (Tandem double cut band saw)
  #3 Murray Timber, Ireland
  (High production circular saw line)
- Conclusions
The VOLLMER group is based in Biberach and consists of 4 production sites and 9 subsidiaries worldwide.

The group currently employs a workforce of approximately 700.

The main site in Biberach houses the headquarters of the group’s management board and its research and development centre.
SawTech 2009: Company profile

Sawmill industry
Grinding and straightening machines for band saws

Sharpening shops
Grinding machines for TCT & HSS saw blades
Erosion machines for PCD tools
Better accuracy, more performance, better surface quality

Case study #1
New Japanese mill of Orvis Corporation
Background Himej mill of Orvis Corporation
- Established in 1959, one of Japan's leading enterprises with more than 250 employees
- Two saw mills with total annual production increasing to 400,000 m³
- Owns its own vessel, called the Green Hope
- Import logs from New Zealand (radiata pine)
- Himej sawmill site covers 75,000 m² production, 50,000 m² stockyard
- Equipped by HEINLOA Sawmill Machinery, Finland
- Three quad band saws and one twin
- 14 wide band saws in use at same time

In the sharpening shop at Orvis Corporation. The inventory of VOLLMER machines includes:
- GPA 200: Newly developed Stellite® tipping machine based on plasma welding technique. With 2 CNC-controlled axes. Ideal for stelliting band, gang and circular saw blades.
- CBF 300: Robust, tried- and tested side grinding machine for band saw blades. Simple operation and high precision grinding.
- CA 200: Profile sharpening machine with 2 CNC-controlled axes. For band saw blades up to 270 mm width. With 30 standard tooth shapes
Newly developed Stellite® tipping machine based on plasma welding technique. With 2 CNC-controlled axes. Ideal for tipping band, gang and circular saw blades.

**GPA 200**

- Blade width: 80 to 360 mm
- Blade length: 6 to 18 m
- Tooth pitch: 10 to 100 mm
- Blade width: 0.6 to 3 mm
- Circular saw blade diameter: 220 to 900 mm
- Working speed: up to 10 t/min

**GPA 200: Focus on Stellite® tipping**

- Accurate shaping of cutting teeth in forming jaws allows highly economic use of stellite and short grinding times
- Stellite® CNC feed system for wire or rod
- Tipping of circular, band, gang and mini gang saws possible
- New plasma unit with „ramp“ up/down of power for better flexibility of tooth shapes
- All components integrated in machine: welding unit, complete cooling system, annealing station (optional)

- Efficient use of material thanks to coil or bar-type stellite feed
- Molten stellite application in forming jaws ensures economic use of material
- For optimal saw tooth condition: the integrated annealing station (optional)
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CBF 300

Robust, tried-and-tested side grinding machine for band, gang and circular saw blades.
Simple operation and high precision grinding.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
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<tbody>
<tr>
<td>Blade width</td>
<td>60 to 420 mm</td>
</tr>
<tr>
<td>Blade length</td>
<td>from 5.5 m</td>
</tr>
<tr>
<td>Blade thickness</td>
<td>0.9 to 3 mm</td>
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<tr>
<td>Tooth pitch</td>
<td>6 to 100 mm</td>
</tr>
<tr>
<td>Working speed</td>
<td>up to 20 t/min</td>
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</table>

CBF 300: Focus on side grinding

- High grinding accuracy and surface quality using the wet grinding technique with CBN grinding wheels
- Exact level grinding surfaces thanks to side grinding even after several resharpening processes
- Highly economical, space saving operation in line with profile grinding machines like CA 200, CA 300 and CA 350
- Possibility of grinding circular and gang saw blades as well as narrow band saw blades for manufacturing mini gang saws
- Three grinding programs integrated as standard
CA 200
Profile sharpening machine with 2 CNC-controlled axes. For band saw blades up to 270 mm width. With 30 standard tooth shapes

- Blade width: 70 to 270 mm
- Blade length: from 5.5 m
- Blade thickness: up to 2.8 mm
- Tooth pitch: 6 to 120 mm
- Tooth height: up to 40 mm
- Working speed: 5 to 30 t/min

CA 200: Focus on profile grinding
- Two CNC axes control tooth feed and grinding stroke, eliminating the need for cams
- Wet grinding with full enclosure and extraction system to meet increasingly rigorous standards on safety, noise and emission protection, helping to create safer, pleasant working conditions
- Outstanding grinding finish using either CBN or corundum grinding wheels
- Automatic dressing of corundum grinding wheels ensures precision profile grinding
CA 200: Focus on profile grinding

- Only two grinding passes required for newly stellited saw blades, only one pass for regrinding
- Possibility for in-line combination with the CBF300 or CBF310 side grinder for even shorter overall grinding times
- Wide range of grinding programs and their variants such as vario toothing, winter toothing and tooth gullet skipping for newly stellited saw blades
Established in 1926, with more than 120 employees
Output of 40,000 m³ p. a.
Operation of new EWD saw line since 2008
One tandem bandsaw, 2 saws in use at same time
Double cutting band saw for forward and backward sawing
One double arbor circular saw
One resaw
Input logs 40% fir, 60% spruce – mainly for construction timber
Priority on flexibility and timber quality

GPA 200 Newly developed Stellite® tipping machine based on plasma welding technique. With 2 CNC-controlled axes. Ideal for tipping band, gang and circular saw blades.


CA 300: Profile grinding machine with 2 CNC-controlled axes. For band saw blades up to 420 mm width. With 30 standard tooth shapes

RC 100: To complete the operation fully automatic levelling and tensioning machine for band saw blades
CA 300
Profile sharpening machine with 2 CNC-controlled axes. For band saw blades up to 420 mm width. With 30 standard tooth shapes

- Blade width: 100 to 420 mm
- Blade length: from 8.5 m
- Blade thickness: up to 2.8 mm
- Tooth pitch: 20 to 120 mm
- Tooth height: up to 40 mm
- Working speed: 5 to 30 t/min

RC 100
For measuring, levelling, tensioning and straightening.

- Blade width: 70 to 420 mm
- Blade length: up to 18 m
- Blade thickness: 0.8 to 2.8 mm
- Working speed: 5 to 27 m/min
RC 100: Focus on band saw machining

- Complete dressing of band saw blades in a fully automatic sequence
- Only one machine for levelling, tensioning and straightening, thus requiring less space
- Simple, convenient operation. Input of target values on the control panel
- Operating personnel are provided with information at any stage about the current saw blade status
- Precise results with infinite repeatable accuracy as an essential precondition for optimum cutting performance and optimum saw blade lifetime

Case study #3
Murray Timber, Ireland
High production circular saw line
Background Murray Timber, Ireland
- Established 1978 by Paddy Murray and family owned
- Two sawmills with total annual processing of about 800,000 m³ of logs
- New high production circular saw at Ballygar mill from USNR
- USNR Quad Arbor sawbox and double arbor gang saw with guided circular saws
- Capacity of 10,000 logs per shift
- Workforce of more than 140 across two sites
- Input logs 100% Sitka spruce
- Produce carcassing, fencing and pallet material

In the sharpening shop at Murray Timber. The inventory of VOLLMER machines includes:

- CHD251-ND320: Sharpening machine with 5 CNC-controlled axes and robot system with double gripper. For fully automatic, round the clock machining and loading.
- CHF eco: Flank sharpening machine with 3 CNC-controlled axes. For double-sided peripheral grinding. Five grinding programs included as standard.
- CA 200: Profile sharpening machine with 2 CNC-controlled axes. For band saw blades up to 270 mm width. With 30 standard tooth shapes
- MAP 200: Machine for the automatic levelling of band saw blades
CHD 251 R2 with ND robot system

Sharpening machine with 5 CNC-controlled axes and robot system with double gripper. For fully automatic, round-the-clock machining and loading.

Circular saw blade
- diameter: 100 to 840 mm (according to model)
- Blade thickness: up to 5 mm
- Tooth pitch: 8 to 50 mm
- Working speed: up to 12 t/min

CHD 251R2 - ND 320: Focus on TCT circular saw top and face grinding

- Complete carbide-tipped circular saw blade machining at the hook and clearance angle (face and top) in a single setting operation using the patent-protected twin grinding wheel
- Maximum flexibility for machining complex geometries. Each tooth geometry including different chamfer and bevel grinding angles is ground in only a single setting operation
- Saw blade management with direct data transmission to the customer's own EDP system
- Automatic grinding wheel measurement and wheel compensation device
- Reduced machine downtimes due to optimized tooth feed
CHF eco
Flank sharpening machine with 3 CNC-controlled axes. For double-sided peripheral grinding. Five grinding programs included as standard.

Circular saw blade diameter: 80 to 840 mm
Blade thickness: up to 8 mm
Tooth pitch: 8 to 40 mm (optionally 6 to 120 mm)
Working speed: up to 15 (12) t/min

CHF eco: Focus on TCT circular saw side grinding
- Short grinding times, reduced ancillary times, excellent grinding results
- Easy to operate (all main functions set and activated at control desk)
- Easy loading and unloading of machine
- Large number of integrated grinding programs
- An optional measuring device for measurement and automatic compensation of grinding wheel wear. Measuring intervals adjustable.

Tooth side machining
Measuring device for compensation of grinding wheel wear (option)
Various integrated grinding programs
Conclusions

- High quality saw blades provide
  - maximum productions rates
  - longer times between blade changes
  - better yields (kerf, blade run)
  - more accurate - higher quality saw products
- Although tooling cost are less than 1% of total costs, the tool treatment has a big influence of total economy of your saw mill -> Economy depends on sharp tools!
- A preventive resharpening is better and more economic instead of the entirely use of the tool capacity
- Avoid creation of cracks at your band saw by grinding the tooth gullet as well
- VOLLMER - has a complete range of machines to achieve high quality saw blades - band, frame and circular saw blades

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Thank you for your attention!