

Contribution 79 in session “Innovation-driven developments in harvesters and forwarders”

## Active brake-link for faster and safer forwarding

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Brake-links on the tip of the boom are widely used on many types of forestry machines and help to increase the precision of crane-tip movement while reducing vibrations. Standard brake-links are static and often require adjustments to set the dampening level. A patent (2009) describing an active brake-link that can be selectively braked has now been developed to a commercial product.

The study's focus was on time consumption during detailed crane movements, cabin vibration and damages to residual trees. Three different types of boom-tip equipment were studied: 1) standard grapple without any brake-link; 2) standard grapple with active brake-link; 3) grapple tilt with active brake-link.

We carried out a comparative time study when forwarding pulpwood in a thinning stand. We designed a standardised strip road with the same pulpwood logs distributed equally in piles situated in the exact same position for all the repeated loads. The diameter and length distribution of the pulpwood logs were also normalized before forwarding.

Preliminary results show that forwarding time decreases on average by 2% and 5% when using equipment 2 or 3 respectively instead of the standard grapple without brake link (1). The active brake-link is already being partially implemented on cranes with built-in sensors. These crane types make it possible to control the active brake-link according to crane position, grapple sway etc. In future pre-programmed crane movement systems, active dampening can provide dampening calibrated according to, for example, load-weight and velocity.