Contribution 182 in session “Wood supply chain management and decision support tools“

Building models with the simulation software Witness.

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Introductory and for better understanding a short explanation of the flatland cableway project. Today cableway systems play not a decisive role for forwarding timber out of the stands to the forest road. But the changing in traffic ability as a result of the varying climate situation plus the potential of the until now, unused stands in wet areas and also the infectivity of the existing systems, for example because of the unsustainable using of natural anchorages. The Project developed a new cableway system, which is adapted for the (wet) lowland and realizes an (hopefully) easy and cheap shortwood logging. In advance, before the first practical tests started, the possibilities of the flatland cableway were evaluated with Witness. Witness, a simulation software from the Lanner Group, works according to the modular design principle. With several design elements it is possible to create a graphical user interface, which rebuilds simulation problems in a colorful way. Furthermore Witness offers a big assortment for logical, statistical and control options. The software can be used for several different simulation problems, for example simulation the flow of special units in plants. This aspect, the simulation of the flow of one part (f.e. shortwood stems) through several converting and transporting systems, was used to simulate a cableway system. The simulation shows the potential advantages and disadvantages in the flatland cableway systems project, because all needed machines and all the processes itself are configurable in the simulation.
Main points of interest, which were rebuilt by the simulation model, are;
the forestry cableway, which spans over the wood and has the ability to put up assembled wood and to bring it a specified endpoint - the operation range and the distance between the loading points and the weight of every loading could be variated, the forestry worker who bundles/assembles the wood – for every single work step it’s possible to configure the needed time, the carriage with different load capacities, speeds with/without load and speeds for loading/unloading the loads and the excavator, which grabs the bundle of trees from the setup place and brings them to the pilling site or directly on the trailer. Here it is also possible to change the speed with/without load, the load capacity, the speed for loading/unloading and the distance between the set up place und the pilling site.
After rebuilding the interaction between the main operators, several scenarios are tested and analyzed.