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## RS-BoardScannerQ

RS-BoardScannerQ is a new system for automatic inspection of boards and planks in a green or dry sorter. Apart from the traditional sorting functions like bin status display etc., the system will detect all defects and form errors and perform a cut and quality optimisation. The result of the optimisation will be transmitted to the automation system, which will control the cutting and sorting to a bin.

### General

The system is designed for continuous production where inspection and quality assessment is performed followed by a cut optimisation and a sorting decision. The system operates with various dimensions and species.

The measurements are performed by sensors which record data enabling detection of all possible defects. This information is used to optimise cutting and sorting. The aim is to produce the highest possible value based on the set of rules defined in the system.

The system has three main functions:

- Defect detection
- Board optimisation
- Transfer of the optimisation decision to the underlying control system for sorting

### Compact and in Modules

The measurement will be performed with the help of camera sensors mounted both over and under the conveyor in a compact unit. The cameras are mounted in a certain angle, which makes it unnecessary to flip the boards over. A cleverly constructed conveyor will enable the cameras to see the whole board on all sides without obstruction from chains etc.

Thanks to its compactness, the unit can easily be fit into your existing configuration without the need for any major reconstructions. A modular construction system means that you can start by purchasing dimensional measurement only and later on add modules for quality inspection without changing the hardware.

### Camera Techniques



The cameras use dot lasers as well as tracheid and vision technique. The laser light is spread differently depending on the properties of the wood. This information makes it possible to better detect defects when combining it with colour and profiling measurement. One example is the detection of bright knots.

The tracheid technique also helps us in finding differences in the angle of the fibre direction of the wood, which otherwise would be hard to detect using vision technique only. On the other hand, with vision technique we can see colour, which enable us to seeing a number of defects, e.g. black knots, marrow, cracks, blue stain, rot and chalk markings.

LED light is built into the camera units and it's only lit up when needed, which ensures a long life-span. Laser triangulation is used to expose the shape of the board, which means that both dimensional and form errors are revealed, e.g. cupping, board spring, edge curve. The camera units are mounted close to the boards and conveyor, which gives higher precision, resolution and decreases the effect of board vibrations.

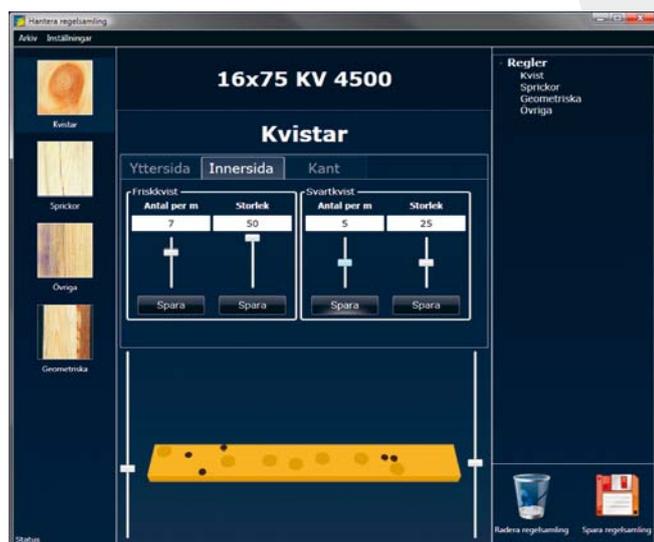




### Approved for Strength Sorting

RS-BoardScannerQ is approved for sorting constructional wood in combination with a strength grading machine like Dynagrade. The approval has been issued by the SP Technical Research Institute of Sweden.

### User Friendly



The user interface of the application is created with good overview and simplicity for the operator as guideline. To achieve this, graphics and animation have been widely used and developed with modern programming tools. The picture above shows an example of how rules for knots are managed.

The computers displaying statistics, product properties, rule sets etc. can be installed anywhere in a network. They support multiple screen displays, improving usability.

The application manages optimisation management/correction, whose principal sections are: Qualities, rule sets, products, prices and production runs. The system also shows real time data and historical analysis. This is important information to enabling early discovery of problems, but also to analysing larger batches to spot hidden problems in time.

### Simulations

There are two ways performing simulations. The first is integrated in the Production Run Programs where evaluation products can be selected. They are calculated simultaneously with the actual result during the optimisation. After the Production Run, the evaluation products can be compared against the actual products used and examined how they performed. The other way to simulating is to record board data during the production and then "run" them in various Production Run Programs. Then, the results can be compared with the actual result and it'll become clearly visible whether more/less volume and/or money will be achieved with a particular Production Run Program.

#### Product facts

Maximum speed	150 boards/minute
Conveyor split [normally]	600 mm
Maximum optimisation time	1,5 seconds after finished measurement
Width	50-250 mm
Thickness	16-125 mm
Length	1800-6000 mm
Species	Pine and spruce
Measurement accuracy width	+/- 1 mm
Measurement accuracy thickness	+/- 0,5 mm
Measurement accuracy length	+/- 10 mm