

## Surprising announcement

### Description

## •A sawmillers dream to see what is inside the log?

**Federico Giudiceandrea was deeply moved when he learned that he and Alexander Katsevich are awarded the Marcus Wallenberg Prize 2016.**

**• I'm very surprised and honoured, Federico Giudiceandrea said at the announcement in Skellefteå, Sweden.**

Federico Giudiceandrea, CEO at Microtec, Brixen, Italy, had come to Luleå University of Technology, Campus Skellefteå, Sweden, to give a lecture on CT scanning of whole tree logs. He was astonished to find that the seminar started with the announcement of the Marcus Wallenberg Prize 2016, which he will share with professor Alexander Katsevich, University of Central Florida, USA.

The prize is an acknowledgement of their development of a high-speed X-ray based computed tomography, CT, for the sawmill industry.

• I was lucky to find Alexander Katsevich and start working with him. He is a mathematician with a deep insight into the theory of image reconstruction and the practical needs of CT. I'm very happy to share my prize with him, Federico Giudiceandrea says.

His own background is in electronics with a focus on bi-dimensional signal filtering and artificial vision.

### High speed logscanner

CT scanning was first used in the medical sector. When the method was tried in research to detect undesired board features in wood, the output value of the sawn timber products increased dramatically. No one believed, however, that a log scanner could adapt to the production speed in a sawmill.

Alexander Katsevich found an algorithm to facilitate producing pictures of good quality at high speed in a CT scanner. The discovery encouraged Federico Giudiceandrea and Alexander Katsevich to implement and develop the technique. Their collaboration resulted in a high speed X-ray based online scanning machine where knots, cracks and rot inside the timber can be detected before it is sawn.

• It is a sawmillers dream to see inside the log and find the internal characteristics optimizing the cutting pattern, Federico Giudiceandrea says.

Several models have been released since the first prototype was built in 2007 at the Wood Research Center of Freiburg, Germany. The first commercialized logscanner was delivered to a wood processing company in the US, specialized in the manufacture of sawn timber from high-quality hardwoods like cherry, walnut, maple and oak.

The second scanner was ordered from Chile, where radiata pine is processed, and the fifth machine was recently installed in northern Germany.

• The machines have been made robust to ensure continuous operations 24 hours a day, seven days a week. Now they have been running for years without problems. They are stable, and the customers are happy, Federico Giudiceandrea says with a smile.

The band speed varies between 60 and 180 meters per minute, and the scanner allows whole tree logs with a diameter of 60 to 70 cm. Up to 300 images per second will be produced.

### **Payback time in a year**

Microtec is cautious not to promise more than an 8 percent increase of value using the scanner in a sawmill, but there is a potential of up to 25 percent if all the advantages of having access to the internal features of the timber are realized.

Federico Giudiceandrea believes that the investment is likely to have a payback time within a year for an average-sized sawmill.

“In ten years time every log in the world will pass through this kind of machine, he says.