

Efficiency improvement in wood processing

An optimization analysis led to savings of around 100,000 EUR a year. All in all, every year 975 cubic meters of sawn timber, planed timber and finger-jointed wood were saved.



Description of the case study:

The company

Holzwerke Heinrich Ströhla GmbH & Co. KG is a small business based in Upper Franconia (Bavaria, Germany). Since 1661, the company works with the raw material round timber. The current owner and CEO represents the tenth generation of this business. Using saw mill technology and a long chain of processing steps, they produce log cabins for clients as well as sawn timber that can be further processed elsewhere. The log cabins are known under the name "HubertusHütten" and are offered in ten different forms, allowing for plenty of different uses. They can be found in gardens, in rural areas and in private backyards.

Holzwerke Heinrich Ströhla GmbH & Co. KG employs 40 people and is a typical small business in the woodworking and wood processing sector. In the past years, management has continuously invested in the company's machinery to keep up with the latest technical developments.

Business opportunities in the sector strongly depend on economic fluctuations and there is tough, global competition. The competitiveness of small and medium enterprises (SMEs) is often put to the test through bottlenecks in material supply and increasing purchase prices in the domestic round timber market. It was therefore crucial for Holzwerke Heinrich Ströhla GmbH & Co. KG to reduce their production costs through strict cost management.

Material usage

Every year, the small business processes an average of 45,000 cubic meters of round timber (at a purchase value of 3.5 million Euros) and 1,100 cubic meters of sawn timber (at a purchase value of around 260,000 Euros). Material usage is currently at 60%, which is above the sector average of 53%. Therefore, the whole process chain was meticulously analysed, from the purchase of wood to the delivery of finished products. This was done through a program for material efficiency: "Impulsprogramm Materialeffizienz (VerMat)".

The production process

The raw material – round timber – is delivered at the “round timber place”. This is where the first steps of raw wood processing take place: de-barking, optical measurement and cutting to length. The wood is then sorted into boxes based on wood species, quality and strength. The type and length of temporary storage also depend on these factors.

- The measured logs are assigned to different uses. In the sawing hall, round timber is transformed into sawn timber with high-performance saws and circular saws. Depending on the product, the edges are done with a completely automatic trimmer.
- After another automatic measurement, the sawn timber is sorted with a sorting device. The sawn timber is then transported with a fork lift and packed in a packaging device. If the timber needs to be further processed, it is temporarily stored in an on-site warehouse.
- The wood is then submitted to dip impregnation to avoid depreciation or destruction of the wood.
- The wood is brought to the required humidity level in an electronically controlled drying chamber.
- All sawn timber that requires surface finishing is planed in addition to drying / impregnation and fingerjointing. They are then finished with a groove or chamfer and profiled.
- The leftover wood from sawing is used for heating purposes in the same plant and wood chips are either sent to the paper industry or burned in regional heating plants.
- Besides the production process, timber purchase and sales also take place in-house to support operations.

Goal of the potential analysis

The consultation using the potential analysis aimed to identify the root causes of material loss and to reach concrete improvements in sawn timber yields through a reduction of offcuts, an increase of plant and work productivity and a reduction of waste in the trimming, warehousing and drying processes.

Consultation procedure

A snapshot of the whole production process from wood purchase to delivery was made as a material flow scheme, in order to identify sources of loss. These material losses were evaluated and allowed for the development of improvements and sustainable solutions. As a result, the production process was standardised and organisational procedures were set. This helped optimise makeready processes, sink processing costs and reduce offcuts and waste. At the same time, the damage of products in warehouses and through fork-lift transport, warehousing and sorting were also reduced. To do this, the following methods were used:

- Goal setting and goal evaluation
- Failure mode and effects analysis (FMEA)
- Continuous improvement process
- Working and testing instructions

Results

The biggest opportunities for increased yield rates were in the sawing line through the optimization of the main and sideboards already in logs through a computer-controlled process visualisation and sawing pattern optimization program. Implementing a thorough incoming goods inspection significantly reduced the waste of finger-joints through the purchase of defective sawn timber. The targeted gain in efficiency through the introduction of material flow-based production management accounted for a total of 1.8 percent of turnover. The plant's productivity could increase by 1.6% and work productivity by 3.4%. The estimated savings account for around 100,000 EUR a year. This requires a one-time investment of 70,000 EUR. This investment was amortised in eight months. All in all, every year 975 cubic meters of sawn timber, planed timber and finger-jointed wood were saved.

Summary

Though the small business already had modern installations, there was a lot of room for efficiency improvement through organisational measures and greater involvement and motivation of employees. That was a good thing not only for the business, but also for sustainability!

Project theme:

Increased efficiency in wood processing

Project implementation:

Holzwerke Heinrich Ströhla GmbH & CO. KG

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www.stroehlaholz.de [1]

Quelle in deutscher Sprache: RKW Hessen

<http://www.innovation-beratung-foerderung.de/INNO/Redaktion/DE/Downloads/Praxisbeispiele-go-effizien...> [2]

What was the type of green solution? Please select the type of solution.:

Technology/Product [3]

What does the featured solution contribute to?:

Resource efficiency

Which technology area(s) does the case study belong to?:

Materials [4], Bio-based materials [5]

Capital costs description:

Implementation of a computer-controlled process visualisation and sawing pattern optimisation program

Material consumption savings description:

Every year 975 cubic meters of sawn timber, planed timber and finger-jointed wood could be saved by the optimisation program..

Cost savings description:

The estimated savings account for around 100,000 EUR a year.

Would you characterize the green solution as:

High capital intensive investment (i.e. above €30,000)

Partners:

Company name

- [Holzwerke Heinrich Ströhla GmbH & CO. KG](#) [6]

Relationship type:

Company that went 'green' by adopting the green solution

Source URL: <http://greeneconet.eu/efficiency-improvement-wood-processing>

Links

[1] <http://www.stroehlaholz.de>

[2] <http://www.innovation-beratung-foerderung.de/INNO/Redaktion/DE/Downloads/Praxisbeispiele-go-effizient/praxisbeispiel.html>

[3] <http://greeneconet.eu/type-green-solution/technologyproduct>

[4] <http://greeneconet.eu/technology-area/materials>

[5] <http://greeneconet.eu/technology-area/materials/bio-based-materials>

[6] <http://greeneconet.eu/holzwerke-heinrich-str%C3%B6hla-gmbh-co-kg>