



SORALUCE

Setting new standards

NEW
CHALLENGES
NEED
SOLUTIONS
NEW

PONSSE

CUSTOMER EXPERIENCES



Dr. Juho Nummela, President and CEO of Ponsse

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Thanks to the SORALUCE automated solution, zero set-up times makes our production flow

AD-HOC AUTOMATION TO BOOST PRODUCTIVITY

SORALUCE has provided the company Ponsse with a palletised production system for the machining of the booms on its Scorpion model harvester.

Ponsse is one of the world’s leading manufacturers of forest machines. Located in Vieremä, Finland, it is one of the region’s leading companies. Its business model is based on premium products in forest machines, harvesters and forwarders, which are both innovative and technologically advanced. In response to the challenge to increase its market share, Ponsse has committed to the development of new products, whereby it launched its new Scorpion model harvester onto the market, which soon became a sales success and a benchmark among forest machines.

The new generation PONSSE Scorpion harvester has won several prizes for its innovative design: a harvester with a unique structure for improving the driver’s ergonomics and the machine’s operating performance. Among others, it has won over the 38-member jury of the Red Dot Award: Product Design 2015, as well as receiving the 2015 International Swedish Steel Prize and the Quality Innovation

of the Year in 2013, an accolade SORALUCE was awarded in 2015 for its innovative Dynamic Active Stabiliser (DAS) system.

The geometry of the boom on the Scorpion harvester involves a wholly innovative design, which provides the driver with a full view of the working area. The unique new crane solution offers excellent visibility in all directions, enabling smooth, flexible operations whatever the conditions.

In response to the growing demand for this and other models, Ponsse has enlarged its premises and has expanded its production systems, investing in heavy-duty machinery with a high level of automation.

To do so, it has worked with SORALUCE, a partner with which it shares a similar business outlook, based on providing customers with a premium product that is both innovative and has a high value added. The production process at Ponsse, like SORALUCE, includes the manufacture of the key components for its products: such as booms, heads and frames, tackling this challenge in a fully automated manner. An expert customer that knows what it wants.

BACKGROUND

Back in 2007, Ponsse also worked with SORALUCE on the supply of a palletised production system based on two SORALUCE FS-8000 floor type milling machines (moving column) standing opposite each other for the machining of frames on the brand’s range of harvesters and forwarders.

These machines have been in operation since 2007 in three shifts in order to cater for the company’s production requirements.



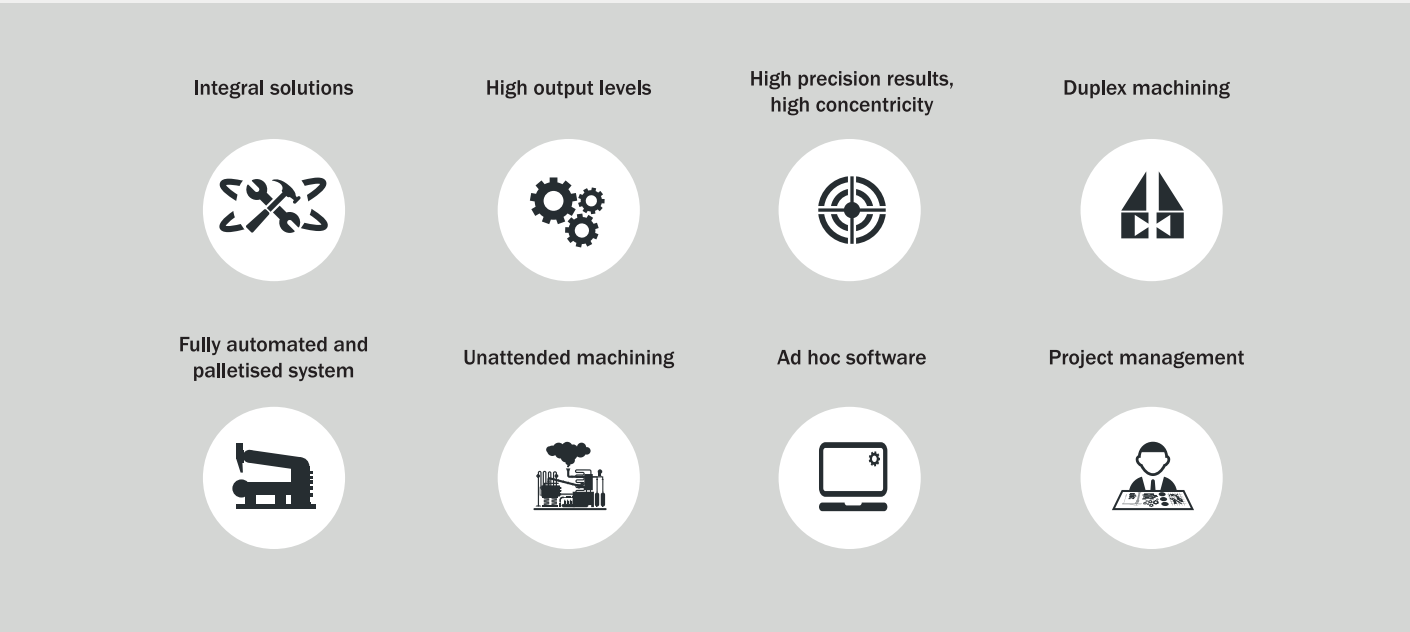
PROJECT REQUIREMENTS

The project involves the machining of the booms on the harvesters, with the customer’s main requirements being as follows:

- › Full machining of the boom on the Scorpion harvester: both the part made of construction steel or electro-welded and the part made of cast iron that is attached to the fork. In addition, the machinery needs to be able to machine the entire range of booms, thereby attending to Ponsse’s complete catalogue.
- › High levels of production: output of booms/year, which means the machine needs to be able to operate over three shifts.
- › Fully palletised and automated system. This responds to both production requirements (production-related factor) and the company’s business approach. The time

spent setting up a part accounts for a major share of its overall cycle, while the machining cycle itself is very short, which is the reason for automating the system.

- › High-precision machining of the bearing supports with high values of concentricity.
- › Limited space available at the plant, so the system’s layout needs to be optimized – the layout has been considered jointly.
- › Cleanliness of the workplace: it is important to stop shavings building up in the workplace, avoiding false alarms and ensuring reliability.
- › Single supplier for the machine and palletizing system, a single contact person for the entire production system.



SORALUCE'S SOLUTION

SORALUCE has presented a fully palletised and integral solution based on two SORALUCE FP-8000 duplex model floor type milling machines standing opposite each other. SORALUCE Duplex milling-boring machines DUPLEX milling machines are two machines located one opposite the other, which can work separately or as a single milling machine. This solution provides multiple advantages, chiefly:

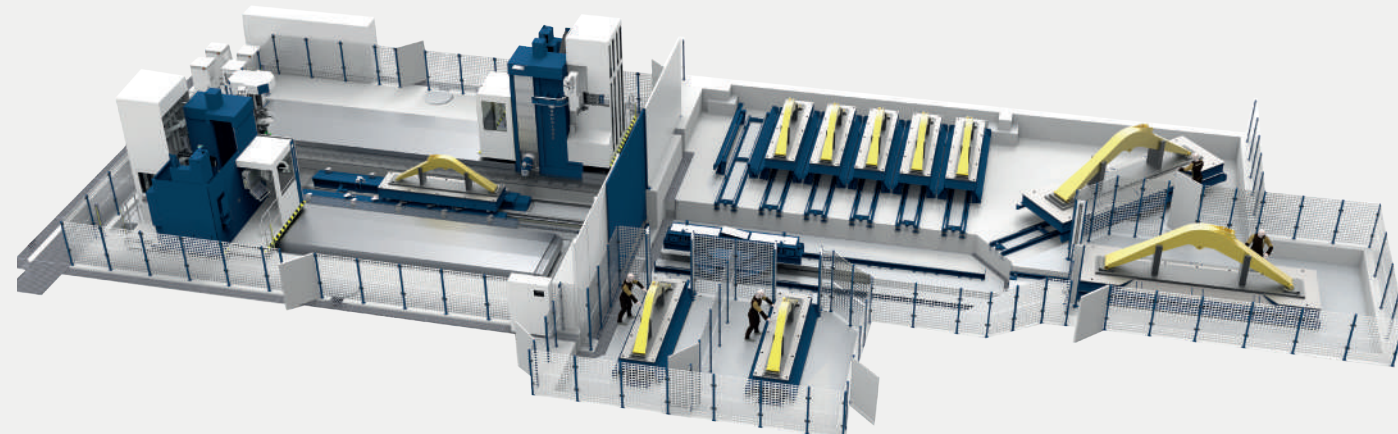
- › Production increase of up to 50% in relation to conventional solutions, i.e. individual milling machines.
- › Improvements in part precision, by managing to do the machining of the part in one single setup.
- › One sole operator can control both machines
- › The space required for the machines is reduced in relation to other conventional solutions.

SORALUCE has provided a fully palletised solution that caters for an unattended machining process. This solution is based on a fixed working table to ensure the system's utmost rigidity.

The loading/unloading stations are where each part is prepared. Each one of these areas is isolated from the others, so an operator may work in one area while parts are being loaded/unloaded in any one of the other areas. These areas are fitted with photocells that detect the presence of an operator, thereby complying with EU safety regulations.

The operator has only a minimal amount of work to do, being simply required to handle the parts for their attachment and carry out maintenance tasks.

The palletizing system has a fixed working table and dedicated loading/unloading and parking areas.



The transfer system is based on a pallet loading/unloading system, which moves the pallets from the loading/unloading stations to the parking lots, and from the parking lots to the machining areas, and this movement may be made directly from the loading/unloading to the work area, at the operator's convenience. Basically, it transfers the pallets from any station (parking lot or loading/unloading station) onto and off the working table.

The pallet loading/unloading system consists of two key elements (rotary and travelling platform and pallet transfer conveyor) and the entire operation of the palletizing system is staged in three movements.

The pallet transfer conveyor serves two different purposes: It transfers the pallet from the fixed station (parking lot or loading/unloading station) to the rotary and travelling platform and back, and transfers the pallet from the rotary and travelling platform to the fixed working table located between the machines, and back.

The working area is equipped with two tables prepared for the two types of pallets. The tables have sloping sides to help remove chips, which are cleared away by extractors. The pallet is a single-bodied rigid feature for holding the part and the tools, and fully enters the working table by means of the pallet transfer conveyor.

The attachment is performed quickly and precisely, releasing and locking the pallet automatically, ensuring its correct positioning. The system has an automatic closing and sealing system for keeping out chips (blow-out function for cleaning up purposes).

Each part is linked to a machining program, and the part may be loaded directly from the loading/unloading station or from the parking lot, either manually or automatically, at the operator's convenience.

THE MACHINE

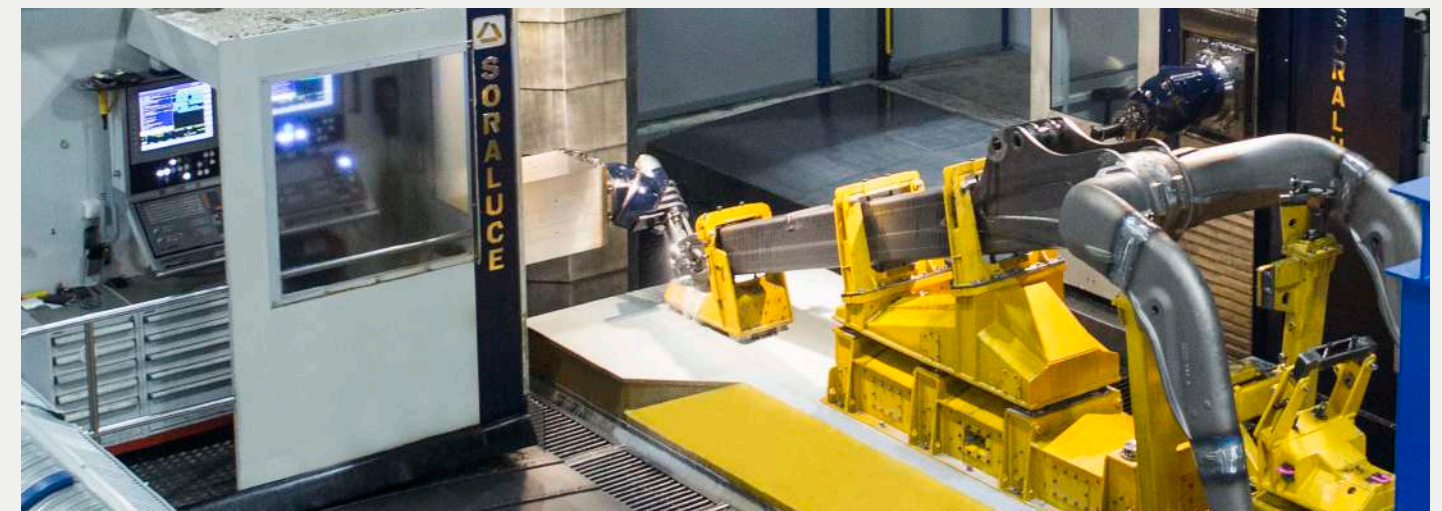
The machines are fully equipped:

- › Automatic, new generation universal head with constant oil lubrication, and outstandingly high reliability.
- › Automatic tool changing system .
- › Fully enclosed pick-up where the master spindle and calibration arm is fitted for machine set-up operations.
- › Tool management arrangement with a wear detection and control system.
- › Air-oil minimal quality lubrication (MQL) system for the enhanced and more eco-friendly lubrication of the cutting area.

- › Management and traceability of the parts to be machined by means of ad hoc software developed by SORALUCE, taking into account the specifications of PONSSE parts. In addition, the machine has the cycles and options SORALUCE has developed for Duplex machinery.

Specific cycles and options for DUPLEX milling-boring machines:

- › Double control panel to operate both machines from a single position and only by one operator.
- › Synchronization of the CNC programs to increase productivity.
- › Anti-collision system to prevent any collision between the two machines in the event of any programming failure.



THE PROJECT

The project is the outcome of ongoing collaboration: understanding and interaction between SORALUCE and Ponsse throughout the system's entire project and installation cycle, ensuring that all the components operate properly.

The machines are fitted with a remote servicing system, so the entire machinery and palletizing system can be monitored from SORALUCE, with a view to providing a real-time response to any possible eventualities.

