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## Prima Power technology showcase in Finland

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A wide selection of the latest Prima Technology was on display in Kauhava, Finland, where a three-day open house event was arranged on 1 - 3 April. Visitors could witness the capabilities of Prima Power technology from punch presses, laser cutting machines and integrated manufacturing cells to a complete flexible manufacturing system. Continuous Prima Power focus on product development was reflected in new, innovative solutions.

### New punching - shearing cell for 2,500 mm x 1,250 mm sheet size

A significant Prima Power product launch in a new, attractively priced Shear Genius® punching - shearing cell for sheet sizes up to 2,500 mm x 1,250 mm.

In the new SGe5, Prima Power included all the inherent benefits of servo-electric technology and integrated - right angle shearing making it the younger brother of the Shear Genius® SGe6 series in every respect. The benefits include fast and reliable punching and shearing, high component quality, edges without burrs, saving in material and reliable automatic handling of sheared parts. Extra work due to micro joints and sheet skeletons is eliminated. Power supply requirement as well as energy consumption and maintenance costs are remarkably low.

Thanks to servo-electric technology also roll forming capabilities are advanced.

Low noise level is a further benefit. The 84 dB level of earlier hydraulic models has been brought down to 73.3 dB.

Integrated right angle shearing saves 10% - 15% raw material compared with stand-alone machines, lowering material cost which may amount up to 60% of total component cost.



Fixed costs can be lowered and productivity increased at the same time. At best, when fabricating rectangular parts the material can be utilized completely.

The SGe5 is not just an automatic, integrated cell. When the manufacturing task requires only punching and forming, the machine can be operated just as a high-performance turret punch press.

### **High productivity at lower investment**

Mikko Fiskaali, Product Manager, says that the development target was to make it easier for fabricators to adopt modern technology.

“Machine price is only part of the investment”, Fiskaali says. “Financing may be hard to find, and its price tag may be prohibitive. Eventual expansion of premises or construction of machine foundation does not come for free.”

“The SGe5 is quite enough for many applications. If current production is based on 2,500 mm sheet size, switching into larger format might involve investment due to changes in factory logistics and logistic equipment. The compact SGe5 can be installed even when the premises have limitations.”

“The faster the installation and start-up, the more money is saved. Installation time is 40% shorter since as much as possible has been made at the Prima Power factory.”

### **A single programming solution**

For automatic programming, Prima Power developed the NC Express® Lite system for both versatile punching and shearing, according to Fiskaali offering more capabilities at lower cost for machinery which is mainly operated without an integrated storage. The system supports loading and sorting. If automatic stacking is required, a more extensive Prima Power programming solution is needed, but also the basic SGe5 solution can be upgraded to include stacking.

There is a little need to program at the machine due to the large number of tools available thanks to the turret design.

### **New capabilities in automatic COMBO storage**



New capabilities have been developed in the Prima Power COMBO range and automatic storages. A special gripper is now available which makes it possible to load single sheets at a time from the storage to the machine. Thus the storage crane has a dual function: handling sheet stacks on cassettes and loading individual sheets with the gripper.

The new capability adds flexibility and production speed, as material flows are fast and material change can be made at short intervals. Also loading of material into the storage is fast as sheet stacks are loaded.

COMBO can be integrated with one or more machines and cells either using the standard connection, in which material stacks are loaded to the machine, or the fast sheet-at-a-time connection when special response times are required to meet production targets.

## ZAPHIRO® with loading - stacking robot

The LST loading and stacking robot, previously available only for the PLATINO® laser cutting machine, can now be connected to high-end ZAPHIRO®. ZAPHIRO® features a 4 or 5 kW CO<sub>2</sub> laser source. With linear motors positioning speed up to 240 m/min is achieved (X/Y). Work area is for sheet size 3,000 mm x 1,500 mm. Precision is one of the highest in the market, with positioning accuracy and repeatability of 0.03 mm.

The LST eliminates manual separation of cut parts from the skeleton and therefore reduces manual operations, increases part quality and reaches a higher level of productivity with unmanned operations. The robot picks the parts direct from the cutting head one by one, and they are accurately stacked on table or wagons, or sorted into boxes.

Parts up to 200 kg in weight can be picked and also very small parts when their geometry is suitable.

The RALC (robot assisted last cut) option ensures reliable picking. The part is held by the robot when it is separated from the sheet, and thus the sticking of even intricate components is prevented.

## New developments in PSBB flexible manufacturing system

Prima Power's compact FMS solution PSBB (punching - shearing - buffering - bending) with its added versatility was demonstrated. The variety of applications and markets where PSBB



gives superior performances is proven by recent deliveries e.g. to Germany, Brazil, Russia and India.

PSBB is based on a Shear Genius® punching - shearing cell, an automatic Express Bender bending cell, both servo-electric, and dynamic management of material flow and buffering as required by the application.

### **Always the optimal operation mode**

Extreme system flexibility derives from versatility of work stages and the availability of several operating modes. With buffering and the operating modes maximum production efficiency can always be ensured despite the difference in cycle times of different work stages. Operation possibilities, which can be used simultaneously, are:

- Direct, material flow from Shear Genius® to bending cell
- Use of the whole stacking area for buffering in direct connection
- Simultaneous stacking on tables/wagons and retrieval of components from tables/wagons to bending cell
- Use of the whole stacking area in unattended operation

### **Picking and stacking robot PSR**

The picking and stacking robot PSR has a major role in system flexibility. It allows re-organization and optimization of production flow between Shear Genius® and the Express Bender Cell, and thus nesting can be optimized for the right angle shear.

With the robot, parts can be added to production flow via storage connections or from other cells with wagon connection. In this way, the utilization ratio of the bending cell can be considerably increased considerably.

Using the large buffering area and with flexible process control even demanding kit production can be organized for outstanding efficiency.

### **Flexible import of material**

Raw material can be loaded from wagons, the system can be integrated with a cut to length line, and flat components can be brought from outside the system for automatic bending.



## Tulus® Power Processing

Tulus® Power Processing is a Prima Power software solution for controlling the whole production process from order management, programming and machine time scheduling all the way to the finished product and reporting. It communicates with the enterprise resource planning system and, at the same time, operates as a manufacturing execution system. Tulus® Power Processing makes the production process transparent, because the status of the production and the work stages of each part is always known.

During the Technology Days, the versatile features of Tulus® Power Processing were demonstrated in practice. In the production environment created the whole production chain was controlled from part preparation to the finished product and reporting. The visitors were able to follow the process with their smartphones.

The components of the product were manufactured on the Prima Power PSBB production line and assembled manually in the Tulus® Terminal work center. The demonstration was authentic and included even a situation where a part was damaged during the process. In such a case, the software automatically places a new order if there are no ready parts in storage.

The product was treated as single production order. Thus, the whole product assembly was structured, nested and manufactured together. The parts were routed to different work stages, and comprehensive production reports were generated.

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