



# P-System

## Lamello P-System for the CNC Machining Centre: Benefits, requirements and experience

[www.lamello.com](http://www.lamello.com)

# Productive integration

Simple, quick and precise. The P-System was launched in 2011 with the Zeta P2, a new member of the Lamello cutting family. What is less well-known is that the connectors can also be directly integrated into CNC production for small series production. What does it offer? What does it need? And what do colleagues say?

Since 2011, the various connectors offered in Lamello's proven P-System have provided a time-saving production alternative and new planning options in furnishing and interior fitting. The system was launched with the manual Zeta P2 machine. Since then, further variants with new and smart fields of application have been added to the pioneering Clamex connector. Working with various partners, Lamello has also developed solutions for integrating the P-System directly into the production flow in the CNC Machining Centre. What are the options? And what benefits are there for the user? We asked the manufacturer and a colleague.

### From a batch size of 1 to series production

A few years ago, a partner network was created in response to increasing demand, as the best way to support customers in installing the connector. Samuel Hänni, Head of Product Development at Lamello, oversees this network. It ranges from well-known CNC manufacturers, who have developed macros and components, to tool and aggregate specialists, right through to system integration by CAD programmers and CAM providers. As Hänni comments, "Depending on the application, it pays dividends to cut P-System joints with CNC technology, whatever the size of the operation." He also adds: "Based on the feedback we have received, we can see that even plants with just 1-4 operators have successfully



From triple-axis to the shaft miller: with the action cam directly in the CNC Machining Centre. The Lamello website includes a video which shows interesting machining situations with different machine configurations – click and enjoy!



integrated the system into production with CNC technology. Large companies of course also benefit from the advantages the connector offers in manufacturing series-production furniture. Current examples include Hülsta (DE), Florense (BR) and Salm (FR)."

### Advantages in production and outside the workshop

In recent decades, CNC hardware and software has been designed largely for excentric connections for detachable workpieces. The

development of the P-System means a range of benefits for manufacturers, fitters and end customers, reports Hänni. This is evident in production due, for example, to the lower number of cutting steps. The comparison is that, on the one hand, twelve processing steps are needed to drill a conventional excentric fitting for a detachable furniture corner joint (2 x 3 for 2 excentric fittings and another 3 x 2 for the dowel). On the other hand, no dowels are needed with the Clamex-P. This is due to the use of guide bolts, and as a result this joint needs



The advantages compared with conventional excentric solutions: the P-System (left) connectors can be inserted tool-free in the bench room or outside the workshop. The small access hole scores points visually.



Easily stackable: what's more, the transport volume is greatly reduced by the Clamex connectors (left) if there is significant pre-assembly. The risk of damaging the finished workpieces in transit is also reduced.

just six processing steps (2 × 2 for the profile grooves and 2 × 1 for the access holes). This saves time in production due to the lower number of processing steps. The user is also provided with a joining solution for any angle, which in turn means efficient planning. The direct transfer of processing data from CAD/CAM makes the process even more convenient. After cutting, other benefits include tool-free insertion by hand in the bench room or outside the workshop. More pre-assembly means that the transport volume is also reduced, as is the risk of damage to finished workpieces (see photographs). Visually, the P-System scores highly with customers due to the small access hole with a diameter of just 6 mm. As Hänni points out: "For many manufacturers, its stylish appearance and easy installation is the main reason for using the system."

#### Technical requirements for use

There are various options available for those who want to integrate the Lamello P-System into production using CNC technology. The market currently offers three CNC machines with P-System milling integrated as standard for companies who want to set up a CNC Machining Centre. These are the Weeke BHX 200 (Homag), the Evolution 7405 White Edition Connect (Holz-Her) and the Brema Eko 2.1 (Biesse). If existing technology is used, the requirements depend essentially on the field of application – is it a surface, corner, dividing panel or even cutting at a free angle? If you have a triple-axis CNC Machining Centre with a rigid angle aggregate, the Lamello cutter can be used to produce 90° connections for furniture corners and dividing panels, explains Hänni. "For specific angles, you need an adjustable aggregate or a 5-axis machine. Due to huge customer demand, Benz



*Diamond tipped: The P-System miller for the CNC Machining Centre*

for example has adapted its Flex5 and Flex 5+ aggregates to the P-System application." A 5-axis machine also provides the option of producing surface cuts with a shaft tool. In contrast to the circular standard cutter (see photograph), the shaft cutter makes a reciprocating movement to create the groove.

#### Points of contact at Werkzeug & Co.

The Lamello website lists the manufacturers which are part of the partner network (in the Joinwood/P-System-CNC/CNC partners menu). "In general, we offer a range of tools to equip any machine," promises the Head of Development. The tools and aggregates can also be sourced from specialist dealers via the official partners (Leuco, Leitz, Oertli or Benz, Atemag, Gotefeld and HSD) Joiners and carpenters can either source the macros/components from the respective machine manufacturer, or program them themselves.

#### Software development marches on

Registered Alphacam customers can download P-System macros for the CAD/CAM software for free. Other software partners such as imos, Cad+T, TopSolid, Point Line, etc. are pressing ahead with plans to make full integration of the P-System an industry standard. Developments are also in the pipeline to cover all standard connections and angles. CNC manufacturers are currently working

on providing the option of integrating their furniture configurators, which are used by customers to define processing parameters when creating the 3D model, into the P-System. (mh/source: Lamello)

#### "Huge tensile strength, practical for small and large series"

Penzel Joiners from 25355 Barmstadt has used the P-System for years. The six staff in the workshop produce high-quality interior fittings for the ship building industry, but also for objects on dry land. The manager, Sven Penzel, is not only on board during the planning and production but also during construction of the vast projects.

He invested in the Lamello manual machine Zeta P2 in 2012, directly following the market launch. In 2013, he acquired a CNC P-System cutter together with the purchase of a 5-axis CNC Machining Centre. We talked to him on the phone and he told us about his experience:

"We have been using the Clamex connector since 2008. When the P-System was launched onto the market, we decided to go for the complete package based on our experience with the connector," remembers Sven Penzel.

We are currently using the CNC cutting tool on a 5-axis Homag Venture 316 L. That's why Penzel Joiners doesn't need an additional angle aggregate to cut connections on outside corners, on the surface and on mitres. When we purchased the P-System package, Lamello directly supplied a woodWOP macro with it, which Penzel uses to this day.

"It is important to note however that connections in level areas must be fitted at an angle of 1-2°, since otherwise we have found that the miller spindle gets stuck," explains Penzel. He emphasizes that it had no effect on the function of the connector and explains: "Because it has a small access hole, we use the Clamex series for places where customers set great store by aesthetics – from cabinet side panels to access panels, which are often found in ship building in particular – or wherever structures need to be particularly sturdy due to very high tensile forces. Since large desks also need to fit through the narrow corridors of the ships, we have to supply everything unassembled. For this reason, we rely on everything fitting on site, being assembled quickly and being built to last."

He adds that cutting connectors on the CNC Machining Centre pays off as series production quantities increase as it's quick, precise and stress-free. "For around four cabinets or more, you see a definite time saving," says the master joiner, recounting his own experience. Something like a large bedroom wardrobe then?

"Yes, that's where you start saving time. For us, the savings peak when you've done around 48 cabin fittings, complete with cupboards, beds and bedside tables. For single cupboards, it's quicker to do them manually," comments Penzel.

Even when the CNC Machining Centre is at full capacity or when there's a huge amount of work to do, the master joiner and his team enjoy using the Zeta P2. That's why he has no qualms about using both options in their everyday work.



*In the far north of Germany, joiner Sven Penzel makes exclusive furniture for ship building and property construction projects. In a phone interview, he told us about his experience of using the P-System in the CNC Machining Centre.*



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