

Clamping down on lost time

From clamping to automation, Lang Technik offers a simple, precise, controlled process to clamp, load and unload workpieces from 5-axis milling machines. This process offers to reduce raw material costs, improve cycle times and maintain consistent high reliability, whilst reducing downtime and offering low running costs.

The Lang workholding and automation products, distributed in the UK and Ireland by Thame Workholding, offer a new innovative and patented approach which removes the need for high clamping forces but never the less improves the gripping power. This new method overcomes many of the problems associated with conventional high force clamping systems and offers consistent accuracy with low clamping forces. The system's holding power relies on Lang's Grip Fix stamping system to produce precise, contoured indentations in the raw material. These engage with a matching pattern on the jaws in the Makro Grip vice to lock the material in place, whilst the jaws tooth design and a centralised stamp mark makes lateral alignment simple, achieving repeatability better than 0.01mm, with clamping confined to 3mm of the billet. Not only does this save material, but it also allows access to more of the component in one setting. This makes it easier to achieve one hit machining and also perform complex 5-axis operations without interference with the tool or its holder.

To optimise repeatability and accuracy, clamping force can be regulated using a torque wrench. This ensures the workpiece will not be distorted through over tightening, yet will provide clamping rigid enough for



the heaviest machining operations with materials ranging from stainless steel, titanium, aluminium, plastic, etc. To add to its versatility, the vice can be fitted with soft jaws. These are up to 40mm thick, big enough to accommodate most machined contours and hold awkward parts securely. The clamping bolts in the vice base are designed for precise alignment in Lang's Zero-point clamping system, simplifying machine setting and eliminating the possibility of error.

Automating the clamping process is easily achieved by using the gravity powered Lang EcoTower, which brings automatic pallet loading and unloading within the grasp of every machinist. The system stores pallets in a helical slide arrangement which is compact in size, low maintenance, and inexpensive to install. Automatic loading of pallets can more than double productive hours on the machine tool by reducing change over times between jobs, enabling unmanned operation and allowing the continuation of machining outside normal factory hours, producing significant cost reductions for each part manufactured.

The Eco Tower allows engineers to load a series of pallets onto the helical slide using its powered elevator. Reliable, hardened guide rails in the slide direct the pallets down, ready for picking and loading into the

machine. This can either be done manually for small batch runs or automatically with the Lang handling system. The unit can pick and place pallets in the machine tool. Repeatability is ensured by the unit's pneumatic linear axle, while changing the setup to suit different machine tools is accomplished with the simple mechanical controls.

An alternative to the Eco Tower is the Eco Compact, which is the latest addition to the Lang system and a cost-effective load/unload option specifically designed for small batch production. The Eco Compact features a horizontal indexing table capable of holding up to ten Quick Point pallets that are accessed by an integrated Eco Feed handling unit.

Whatever the eventual configuration of a Lang modular automation system, the low pneumatic drive forces involved mean that no housing, enclosure or other form of man/machine safety barrier is required. This gives the operator complete freedom to access any part of the working environment around the machine tool.

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