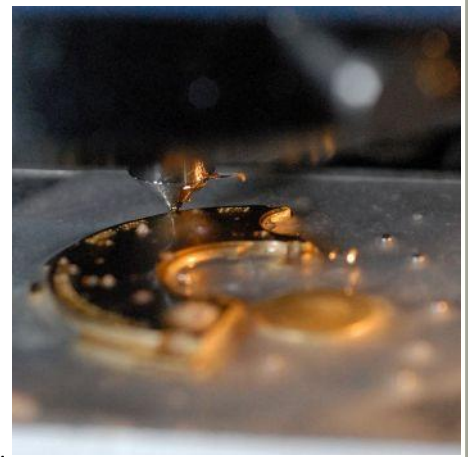


Save Time on Watches

Alphacam and Linear Guide Rails



Linear guide rails developed by CNC machine-tool manufacturer Almac, ensure that Swiss watch-makers who use their ultra precise 3- to 5-axis machining centres produce a better quality component.

Couple that to their long-standing use of Alphacam, one of the most popular CAM systems in Switzerland's watch industry, and it's easy to see why Almac are a leading supplier of high precision machines for all aspects of Swiss watch production.

Almac Director Roland Gutknecht says they are the only machine manufacturer using the technology of four linear guide rails fixed on a prism. "This enables us to give a high warranty of movement in the Z-axis. The four guide rails hold the spindle in perfect linear position, so there's absolutely no tilting of the spindle. And there's no thermal displacement of the spindle, as the heat goes into the centre of the prism."

He says the machines guarantee very high stability and accuracy, which give top machining quality. "The watch-makers who use Almac CU 1007 machining centres produce better quality components than their competitors who don't have them." It has X and Y slides on pre-stressed rails and a ballscrew. The vertical axis is formed by the solid cast iron prism, which a rectangular sleeve moves on, guided by the linear rails and moved by a ballscrew.

As well as the watch industry, Almac machines are used for other micro-machining applications such as medical equipment, aeronautics, jewellery and electronic component connectors.

With just under 50 employees at their factory in La Chaux-de-Fonds, Almac produces between 60 and 70 machining centres a year with high accuracy in all three X-, Y- and Z-axes. "Many of our customers, particularly leading names in the watch industry such as Roger Dubuis, Cartier and Jaeger Lecoulre, work to extremely accurate detail, often as tight as five microns. They need their machines to be in almost constant production day and night, so we supply the full package, including robots, loading and unloading stations, and peripheral equipment for cleaning and deburring."

In all cases where Almac produce components as part of the machine acceptance process, they use Alphacam to generate the NC codes. And when handling new enquiries they will receive details of a part for the manufacturing trials in a STEP, IGES or dxf file and create programs for the demonstration in Alphacam every time.

They also supply customers with special modules of Alphacam developed by the software's Swiss reseller, MW Programmation, for a number of

About The Company :

Name : Almac

Business : Machine tool manufacturer

Website : www.almac.ch

Benefits Achieved :

- High quality perlage
- Accurate detail for watch-makers
- Better quality components

Comments :

"Where we produce components as part of the machine acceptance process we always use Alphacam to generate the NC codes."

Roland Gutknecht
Director

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specialist functions. For instance, watch decorations were done by hand before Almac designed CNC machine tools to implement exclusive pioneering solutions for machining and decorating components that make up watch movements, and these machines are programmed by Alphacam. Almac also produce a range of specialist machines for manufacturing dials, cases, case attachments and links.

The macros for several of the special functions were originally created by MW Programmation at Almac's instigation, and now form part of MW's industry-wide service across Switzerland. They include machining perlage (aspects of decoration such as circles, spirals and linear patterns); sequential numbering to automatically generate serial numbers of pieces without needing to change the NC program manually; palpate, which defines exact placement of the piece before machining; and diamond settings, allowing parameters of the amount, size, and space between stones to be input.

Roland Gutknecht says perlage is a particularly important aspect – often applied to the inside surfaces of plates and bridges as well as on the dial side of the main plate. The cloudlike decoration is generated by the tool only briefly stippling the metal.

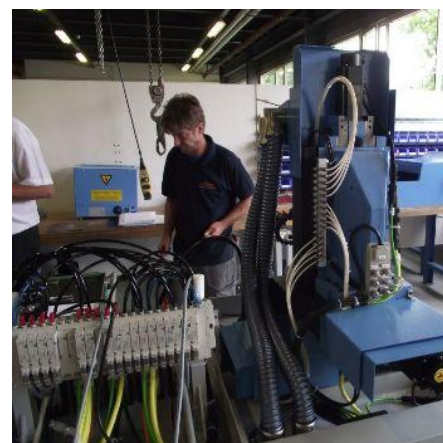
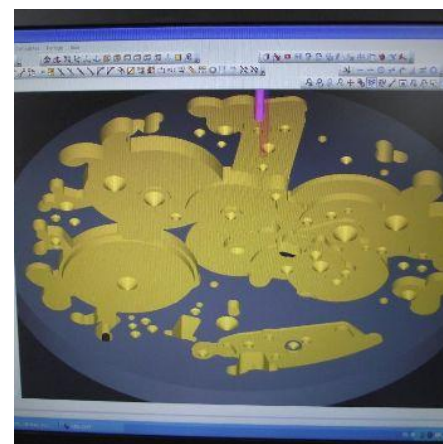
In addition to producing all their NC code with Alphacam for machine acceptance tests, Almac recommend the software as part of their package to start-up companies buying CU 1007 machining centres, and many existing customers already run Alphacam.

MW Programmation work closely with Almac on every aspect of their customers' Alphacam needs, including the macros, post processors, training and technical support. MW have two training rooms at their headquarters in Malleray in northern Switzerland, where they can tailor both basic and advanced courses to individual customers' requirements.

Alphacam is part of the Vero Software stable, and MW Programmation won the Alphacam Outstanding Achievement Award at Vero's 2012 Global Resellers Conference for their specialist vertical market dominance, 350 supported customers, and consistently gaining the highest revenue in the reseller channel.

A recent addition to Alphacam's functionality is a new Waveform 3D Roughing Strategy, which MW Programmation Director Marcel Weber says will be of particular benefit to the watch industry. "The new high speed machining technique maintains a constant tool cutting load by ensuring consistent tool engagement into the material. The tool moves in a smooth path to avoid sharp changes in direction, maintaining its velocity, dramatically decreasing the machining cycle time."

This strategy, which is already proving popular with a number of MW's 1,000 clients across Switzerland, is superior to the traditional Roughing cycle where machinable geometry features are offset – inward or outward – by a stepover. Traditional tool paths have to run slower feeds and speeds because of the variable width-of-cut conditions encountered in corners.



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Tool load spikes as chip thickness increases in areas where the tool finds more material than it did while cutting in a straight line.

In order to ensure they remain a key machine supplier to the top end of the Swiss watch market, Almac are developing the skills of a number of apprentices, to enable them to set the linear guide rails, which Roland Gutknecht says is a specialised task. "It takes a high degree of expertise to manufacture our CNC machines, and an even higher degree of expertise to adjust the guide rails to the absolute level of precision required to ensure it is absolutely impossible to tilt the spindle."

