

INDUSTRY

MACHINE TOOLS

APPLICATION

CNC MACHINES

PRODUCT

PLATINUM

SITUATION/APPLICATION

In today's manufacturing environment, strict tolerances, efficient production speed and flexibility are a necessity. This is especially true in the machine tool industry where CNC (computer numerical control) machines are taken to the limit. CNC is the automated control of machining tools (drills, boring tools, lathes) by means of a computer. It represents a major advance in machining and is a vast improvement over non-computer type machining requiring manual control. CNC machines process materials (metal, plastic, wood, composite, etc.) to precise specifications with a motorized maneuverable tool. It is controlled according to input delivered in the form of computer-aided design files transformed into a sequential program of machine control instructions.

The drive systems used by CNC machines to actuate the tools must deliver smooth, vibration free, precise movement to ensure high precision. Belts used must deliver operating temperature stability, shock loads and chemicals. They must transmit high levels of power at high speed with consistent, repeatable performance.

THE PROBLEM

A machine tool manufacturer contacted Megadyne with the challenge of designing a cost-effective, compact and clean drive system to actuate the tools for a new CNC machine. They were interested in a lightweight system that was low noise and maintenance with a high level of precision.

THE SOLUTION

Megadyne application engineers were able to supply a solution that met all application criteria with their Platinum, ultra-high torque rubber synchronous belt. Platinum's "Dual Core" Hybrid Tensile Cord Technology, combined with a nitrile-based HNBR compound body provides a superior alternative to roller chain which is loud, dirty and require lubrication. It also provided an alternative to metal components such as gears, ball screws and rack and pinion systems which are heavy and expensive.

THE RESULT

By using a Platinum rubber belt instead of chain, the low-cost initiative was met. Platinum's HNBR compound with high resistance to temperature, petroleum oils and solvents addresses chemical and heat resistance requirements while the Dual Core Hybrid tensile member guarantees minimum elongation for consistent precise registration, high power transmission capability and low maintenance. The RPP belt tooth profile with its specially treated nylon fabric cover keeps noise to a minimum while reducing friction and pulley wear, contributing to its recognition as the quietest belt system available.

