MACHINE TOOLS

CNC MACHINES

MEGADYNE

CASE STUDY

CNC MACHINES

INDUSTRY
MACHINE TOOLS

APPLICATION
CNC MACHINES

PRODUCT
MEGASYNC™ TITANIUM

SITUATION/APPLICATION

IIn 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 experienced problems with a belt driven linear actuator on a CNC machine. The synchronous belts from a competitor suffered from elongation and did not deliver the necessary, highly accurate positioning that is essential in machining operations. They required frequent tensioning and were also susceptible to breakage due to shock loading. The application required a high degree of reliability and repeatability over extended time periods with high acceleration and high thrust demands. A low maintenance, cost effective, lightweight, quiet and efficient system was desired. The belts from a competitor were not delivering acceptable performance.

MEGADYNE SOLUTION:

MEGASYNC™ TITANIUM

Megadyne application engineers were able to supply a solution that met all application criteria with MEGASYNC™ Titanium, ultra-high torque rubber synchronous belt. Titanium 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 Titanium rubber belt instead of chain, the low-cost initiative was met. MEGASYNC™ Titanium HNBR rubber compound with high resistance to temperature, petroleum oils and solvents addresses chemical and heat resistance requirements while the advanced carbon fiber cords guarantee minimum elongation for consistent precise registration, high power transmission capability and low maintenance. The RPC 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.

Contact our experts
to find out more