

## Case Study

### Complex CNC machine debris removal solved with the integration of VFD technology

The build-up of metal chips and debris in CNC turning machines can cause damage, affect precision, and shorten the life of the products. In addition, it can cause problems when attempting to dispose of the machine's coolant water waste.

Effective removal of the metal debris has been a problem in the past, but a Brazilian manufacturer's specialist conveyor system, integrated with variable frequency drive technology, is ensuring the quick and safe removal of the scrap.

Cobsen Hennig, a specialist engineering company providing solutions for machining manufacturers, has integrated Invertek Drives Optidrive E3 VFD on to a conveyor removing debris from coolant water in a two-axis, single turret turning machine.

The conveyor system captures the metal debris within the machine, removing it into external bins for safe disposal. Working in tandem with the turning machine, it ensures continued production, reducing any downtime.

"The conveyor has to be accurately controlled for a number of reasons. The first is to remove the debris at a speed relevant to the amount of debris being produced, which can vary between the type of products being machined," said Marcus Silva, Head of Sales for Invertek Drives in Latin America.

"The second is to detect any overloads on the system caused by a blockage and placing the conveyor into reverse to remove it. If necessary, an emergency stop can be performed should an operator be forced to remove a blockage manually."

The Optidrive E3 VFD can control a set of conveyors on the system, as well as individually, controlling the speed, the emergency stop, and lubrication.

In this case, an IP66 rated enclosure was used allowing the VFD to be installed directly on the side of the conveyor, eliminating the need for a cabinet.

"The drive was set up to monitor and detect any overloads on the conveyor that could be caused by a blockage of debris. If this happens, the VFD stops the conveyor and puts it into reverse before returning it to forward motion.

"If the same problem occurs, it'll repeat the operation again up to five times. If the overload continues and the lock is not released, the drive stops the process and an operator can then remove the blockage," added Marcus. "This system means there is less downtime."



The conveyor has been used on the Puma GT 2600M turning machine manufactured by Doosan Machine Tools. Its integration into the machine has ensured the smooth operation of the whole process.

Celso Pavanella Carneiro of Cobsen Hennig, said: “We wanted a VFD capable of accurate control, including a safe stop option. In addition, its size and IP66 enclosure meant it was easy to install and commission onto the conveyor itself rather than a separate cabinet.

“The set-up, installation and commissioning have been very successful for us and our customer. We’re very pleased with the solution.”

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**Notes to the Editor**

**Invertek Drives**

Invertek Drives Ltd is dedicated to the design and manufacturing of electronic variable frequency drives for controlling electric motors. Established in 1998 it has grown year-on-year and is now one of the world’s leading innovators in VFD technology.

In November 2019 it was acquired by Sumitomo Heavy Industries Ltd (SHI), a leading global manufacturer and distributor of power transmission and control equipment. Invertek’s UK headquarters, located at Welshpool, Powys, UK, houses specialist facilities for research and development, manufacturing and global marketing.

All operations, including research and development, are accredited to the exacting customer focused ISO 9001 quality standard whilst its Environmental Management System is accredited to the ISO 14001 quality standard.

In 2019 a new 5,500 sq metre global manufacturing and distribution facility was opened at the headquarters, allowing production of up to 400,000 VFDs a year. Invertek’s products are sold globally by a network of specialist distributors in over 80 different countries.

Invertek Drives unique and innovative Optidrive range is designed for ease of use and meets with recognised international design standards for CE (Europe), UL (USA) and CTick (Australia). More details can be found by visiting [www.invertekdrives.com](http://www.invertekdrives.com).