Lavaggio automatizzato con ultrasuoni e detergenti

Robotic ultrasonic cleaning

Among recently undertaken projects, and of great interest of our sector, is the collaboration between Copras automatics and Ultrasound bt.

The project addresses the automation of innovative robotic systems. Ultrasounds industrial engineering of Milan is a company specializing in the construction of ultrasonic cleaning machines. It also produces earth-friendly detergents for use in industries processing aluminium and its alloys, as well as in the processing of steel, iron and the moulding of plastic and rubber.

Technique

The ultrasonic cleaning machines produced by this Milton-based company make it possible to completely wash, clean, degrease and descale all types of die in a few minutes, including those of a considerable size.

Another prerogative of the machines, which use special ultrasonic detergents, is the fact that they are able to wash, degrease and descale (remove microbars) in a few moments from castings in aluminium and light alloys. In robotic handling processes (those involving dies), the cleaning process takes place in the true sense of the word and treatments of the semi-finished products. The presence of Kuka anthropomorphic robots integrated by Copras allow an extremely wide range of automatic processes, self-managed by powerful electronic mechanical and electronic systems.

The current technology, which is establishing itself increasingly strongly, is applied mainly to the machines.

The operator’s manual work is practically totally automated. Loading the aluminium into the crucible, spraying the release agent onto the open die, extracting the piece, removing the risers and finely positioning the die, stacking it accurately on pallets or conveyor belts used to be process phases performed by men, is now they can be profitably managed by robots.

Application

The expansion of applications of the automatic operations described so far involves all the functions downstream. The light alloy diecasting, be it destined for teo substitution of the systems automated. Il cai-}

La tecnica

Lo Lavativi ultrasoniche prodotte dall’azienda milanese permettono di lavare, pulire, sgrassare, disincrostar e in pochi minuti ogni tipo di stampo, compresi quelli di dimensioni ragguardevoli. L’utilizzo di robot anthropomorfi Kuka integrati da Copras permette una serie elevatissima di produzioni automatiche, autogestite da potenti sistemi elettronici elettronici.

L’applicazione

L’espansione applicativa delle operazioni automatiche che sono state fin qui descritte è implica tutte le funzioni di valle. Il gestito in lega leggera, che si indirizza al settore della meccanica piuttosto che a quello dell’automotive o del medico-legale, deve comunque essere poi sottoposto a diversi lavorazioni.

Tornitura, fresatura, filettatura, controllo e lavaggio sono fasi spesso intervallate dall’esecuzione di numerosi e complessi cicli di lavaggio e sgrassaggio. Molti stampi devono essere manipolati, smontati e puliti in pochi minuti e riposizionati subito in macchina. Se questo non avviene correttamente, infatti, si va incontro alla perdita produttiva.
Vernishing, milling, threading, control and cleaning are phases which are frequently interrupted by numerous complex washing and degreasing cycles. Many dies have to be handled, disassembled and cleaned in a few minutes and repositioned immediately on the machine.

In fact, if this is not effected quickly, there is a risk of losing hundreds of man-hour per day. This means that the hours of work by employees is considered to affect useless, rough manual cleaning operations.

Because of this, the need is increasingly felt for a powerful and accurate robot working in synergy with a highly reliable ultrasonic machine.

This decision was taken by choosing an ultrasonic cleaning which offers a complete range capable of maintaining and installation even for the most problematic cases in terms of mechanical engineering and the proper functioning of the dies (decoating, gravity casting and others) capable of providing the production increase necessary to counteract the extraordinarily fast ultrasonic cleaning.

By using the Kuka robot integrated by Copras, it is possible to effect handling in up to 9 interpolated axes with a capacity as many as 500 Kg in an operational area of 6 meters.

A series of minirobots has been specifically developed for the ultrasonic cleaning of forged or cast pieces. These mini-robots have been entrusted with extracting the pieces, immersing them in the washing tanks, removing and drying them and then placing them in packaging ready for shipping in less than 5 seconds in favorable conditions. All this is regardless of the weight of the piece, which may be several tonnes, and of its geometry, which may also feature blind holes and complicated internal ground threads (it is sufficient to think of cylinder heads, engine cylinders, and gear-clutch components).

The wide range of installation possibilities of the robotised ultrasonic cleaning cell makes it possible to avoid burdensome legislative controls.

Both, the generators and the detergents produced by Ultrasoni are specifically designed for the efficient cleaning of a vast range of materials (aluminium, zamak, zinc, brass, bronze, steel, cast iron, and so on) in total safety, in order to eliminate all TLY-TWA SOV emissions, any harm to the environment and operators, any chemical aggression, any danger of destructive ozone and lastly, any surface residue of the detergent.