

Pneumohydraulics instead of hydraulics

A producer of solder preforms stakes on energy-saving and little-maintenance requiring pneumohydraulics as drives for his press systems

Depending on the application, many press systems are now as before equipped with conventional hydraulic drives. On principle, there is not much to say against, as far as hydraulics prove to be practicable and economical in the long run. But with increasing efficiency and quality demands, e.g. in series production, the hydraulics again and again lag behind. Specially if productivity and cost aspects like cycle times, reduction of non-productive ancillary time as well as energy saving and maintenance expenditure are taken into the calculatory consideration. This happened to the Dutch enterprise Alpha-Fry Technologies BV in NL-Naarden, which as a member of the group Cookson Electronics deals with the production of soldering agents like rods, wires, powder and preforms. These products are not only supplied to electronic industries, but among others also to aeronautical industries where, as one knows, quality demands are very high. The great competence of Alpha-Fry Technologies in the field of semifinished solder parts, so-called solder preforms, for aeronautical industries is recognized and they export these ones throughout the world. For their technically advanced quality production they develop the machines and tools themselves and till now they staked mainly on hydraulic press drives for the required punching and deep-drawing work.

Away with hydraulics and change to...???

Due to the high stress of 3-shift working on five days/week, the hydraulic drives repeatedly posed problems. When now the installation of a further press was discussed, the engineers were looking for an alternative. This alternative should, on the one hand, exclude the known disadvantages of hydraulics like maintenance expenditure, leakage, noise and heat development of the unit, and high energy consumption (11.5 kw/h per press system). On the other hand, the new drive should at least be as efficient as the hydraulic one, and by reducing the non-productive ancillary time for feed/return stroke, it should allow more process cycles per time unit, and, last not least, it should distinguish itself by high reliability for a long time. When searching a corresponding drive system, the engineers from Alpha-Fry Technologies established contacts with Jeroen Wijnbergh, Technical Salesman of TOX[®] PRESSOTECHNIK in NL-Amsterdam. After having described the problems and the requirements, Jeroen Wijnbergh and the technicians of the parent company TOX[®] PRESSOTECHNIK GmbH & Co. KG, D-88250 Weingarten, started to work out a complete solution. Using the portfolio of TOX[®] PRESSOTECHNIK, it was possible to offer the appropriate pneumohydraulic driving technique as well as a complete press.

An alternative - convincing from every angle

The constructing and design engineers from Alpha-Fry were convinced of the complete solution and ordered from TOX[®] PRESSOTECHNIK a press

system consisting of a 4-column press of type MAG 015 and a pneumo-hydraulic driving cylinder TOX[®]-Powerpackage, type SSL 015. In this case, the base press is built of rigid plates with large tool area, conceived for pressforces up to 150 kN max. The TOX[®]-Powerpackage serves as drive and offers a max. pressforce of 150 kN at an air pressure of 10 bar, its total stroke is 55 mm and the powerstroke is adjustable up to 24 mm. The Powerpackage is provided with stroke reduction and enlarged powerstroke valve, resulting in reduced stroke/lowering cycles. For the protection of the tool and the press, the return stroke is equipped with hydraulic end position damping. This version of the Powerpackage is additionally equipped with an integrated holding brake ZSL, which in case of an interruption of the pressurized air supply automatically engages, thereby reliably preventing the potentially dangerous drop of the upper tooling. Already at the factory the press is equipped with a base frame, and the mounting plate is prepared for receiving the tool systems. The tool holding fixture also belongs to the scope of supply. Due to the single source supply of the press system including pneumohydraulic driving cylinder, tool holding fixture, base frame and completely installed energy supply and controls, the technicians from Alpha-Fry Technologies were able to concentrate on the technical equipment for production and tooling, reducing thus the period for the realization of the whole project.

Guaranteed productivity and reliability!

Now that the new press system has well-proven on hard field conditions for quite a long time, Alpha-Fry are fully satisfied in all respects. Because of the closed oil system of the TOX[®]-Powerpackage driving cylinder, leakages are excluded and filter changes, necessary for hydraulic units from time to time, are superfluous. The pneumohydraulic driving cylinder needs just a fractional part of the energy needed by the former hydraulic system, because here the energy is only consumed when needed and not all the time like in the case of the permanently running hydraulic unit. A further advantage of the driving cylinder TOX[®]-Powerpackage is the partition into a mere pneumatically driven fast/approach stroke and the real powerstroke. Here the pneumatic fast approach stroke together with the combined tool system for punching and deep drawing is already used as working function, resulting in shorter process and throughput times. Also with regard to the reliability in multi-shift operation, Alpha-Fry Technologies are more than satisfied. This is already shown by the guarantee of 10 million strokes granted by TOX[®] PRESSOTECHNIK for the TOX[®]-Powerpackage.

Description of illustrations:

Figs. 1 and 2 show the TOX[®]-Press MAG 015 with pneumohydraulic driving cylinder TOX[®]-Powerpackage

Fig. 3 shows different semifinished solder parts made on the press

Fig. 4 shows the modular kit system of TOX[®]-Presses with the possibility to employ different drive systems, for example the pneumohydraulic TOX[®]-Powerpackage or the electro-mechanic TOX[®]-ElectricDrive

January 2012

Figs. 1 and 2 show the TOX[®]-Press MAG 015 with pneumohydraulic driving cylinder TOX[®]-Powerpackage



Fig. 3 shows different semifinished solder parts made on the press

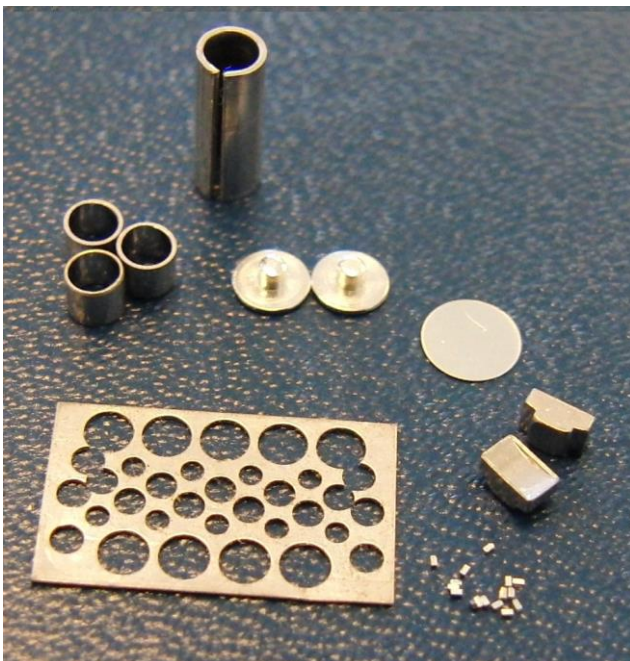


Fig. 4 shows the modular kit system on TOX[®]-Presses with the possibility, to employ different drive systems, for example, the pneumohydraulic TOX[®]-Powerpackage or the electro-mechanic TOX[®]-ElectricDrive

