

FLEXIBLE MANUFACTURING

Punching goes hand in hand with production strategies

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mance values and higher productivity comes a totally new industrial design. Relying on its modular engineering tradition, the company now introduces several optional features that allow better customization of technology to meet application-specific requirements.



New Multi-Tool technology adds to the maximum number of index tools in the turret

THE CONCEPTS of flexible and lean manufacturing became buzz words among proactive manufacturers starting from late 80's. Since that time, the quest for solutions combining precision, low cost-per-component and high surface quality of metal components has continued with increasing momentum, motivated by fierce competition and increased steel, labour and energy cost. One of the major factors contributing to the requirement of increased flexibility has

been the increase in outsourcing components. In difficult times, subcontractors come under ever increasing pressure from the Original Equipment Manufacturer (OEM) to both reduce component prices significantly and improve both quality and delivery times.

Production capacity has been transferred

The shift of manufacturing capacity towards lower-cost operating environments is a well-known fact. Capacity has been transferred into areas that offer lower labour cost, enabling rapid domestic growth and a growing demand for the components and end products. In turn, the European fabri-

cator's counter-measure has been based on the integration of consecutive work stages and increased investments in automation. Whereas, in the past, individual performance figures might have attracted the investor, attention is now paid to the overall



Fast, reliable component marking is a major benefit in JIT manufacturing and subcontracting

processing cost, including set-up change times, simplicity and speed of programming, eventual chances of savings through better raw material utilization, etc. Within just three years the machine tool manufacturer Finn-Power, Kauhava/Finland (www.finn-power.com) and among others its sales subsidiary in Hallbergmoos/Germany (www.finn-power.de) have introduced new automation levels, new product solutions, and a new generation of practically into every machine type in the wide range. Along with improved performance values and higher productivity comes a totally new industrial design. Relying on its modular engineering tradition, the company now introduces several optional features that allow better customization of technology to meet application-specific requirements. The company has been adding indexable upforming to its punching and integrated punching/shearing and punching/laser cutting technology since 2003. A new solution, recently introduced at the Metapro exhibition



The fast component flow from integrated right angle shearing can be flexibly automated

grated device is extremely fast – e.g. in a testing environment, it took a mere 16 seconds to mark 17 components each with a 60-digit sign on three lines plus a complete EAN bar code which can be automatically read. Marking can be done at 0° or 90° angles. Ink marking causes little or no extra work in later work stages, as the mark can be simply wiped off of painted over. Traditionally, loading and unloading of a turret punch press are manual work stages, but in modern fabrication these are often automated for increased productivity. For machines using large sheet sizes (e.g. Finn-Power's

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in Belgium, is also based on index technology. Turret capacity is vital to the competitive edge of subcontractors through flexibility and elimination of unnecessary, non-productive set-up times. The tool system allows standard and index tooling, standard Multi-Tools, Multi-Tools designed for fixed thick turret tools, forming stations, indexable forming stations and upforming. Apart from some limitations, size A to E tools can be chosen from the standard Thick Turret series. The new indexable ›MT3Ri‹ and

›MT8Ri‹ Multi-Tools increase maximum index tool capacity of a machine tool or cell up to 80, i.e. nine-fold from the earlier maximum. Maximum 31.75 mm tools can be used in indexable Multi-Tools with no limitations to nibbling.

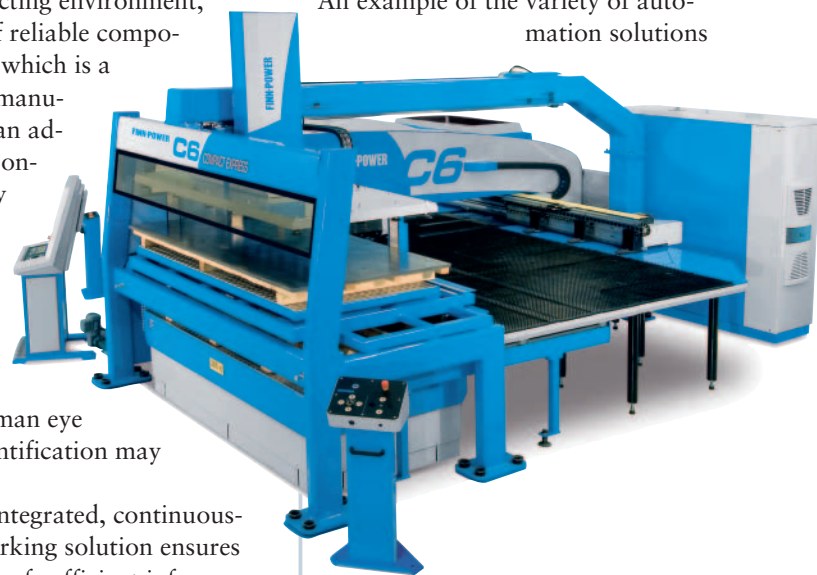
Integrated inkjet marking makes information available

In a subcontracting environment, the problem of reliable component marking, which is a benefit to JIT manufacturing and an advantage in the on-going assembly process, must often be dealt with. Due to logistical problems or simply the limits of the human eye visual part identification may be impossible.

Finn-Power's integrated, continuous-flow inkjet marking solution ensures the availability of sufficient information to the next process stage – logistics, assembly, packing, etc. The inte-

grated ›C8‹ hydraulic (for a maximum sheet size 1,500 mm x 4,300 mm) automation is in practice the only solution. When parts are punched loose, the tedious manual task of breaking micro joints is eliminated. Further, sorting and stacking of components can be automated, as well as the removal of skeletons by hand, which is a cumbersome and even dangerous task.

An example of the variety of automation solutions



A choice among four different material handling solutions is available for the ›C6‹ turret punch press

available is given by Finn-Power's ›C6‹ series turret punch press (maximum sheet size 1,500 mm x 3,000 mm), with a total of four different alternatives:

- simple, compact loading/unloading equipment (Compact Express),
- loading and unloading modules (Finn-Power Express); the unit can be integrated in larger systems,
- loading/sorting system; components can be punched loose and automatically sorted into programmed addresses,
- loading/stacking robot; components can be punched loose and accurately stacked into as many addresses on the stacking table (1,500 mm x 3,000 mm) as the component size allows.

The company's basic criterion in designing all loading and unloading solutions is that, since fabrication needs may vary from serial production to prototype manufacturing, manual operation should not be made impossible or difficult if the automation

equipment is included. Thus, whatever automation equipment is chosen, also convenient manual operation using the Easy Loading system is available for small series or prototype manufacturing etc.

Sophisticated stacking solution for a steady material flow

Finn-Power has dominated the technology market of integrated right angle shearing since 1987 with the ›Shear Genius‹ range, a totally new generation of which was introduced last year. Speed, high edge quality and very high reliability of integrated shearing make it an excellent technique for unmanned operation. One of the new characteristics of the new SG series is intelligent NC-code follow-up which provided shear table pre-opening function and allows fast changes from punching to shearing and back. The increased capacity and JIT production capability of the Shear Genius have now been complemented by a new stacking solution. The tech-

nology allows a steady material flow and optimum, continuous utilization of machine time, featuring the possibility of component buffering before stacking. Parts in great variety from full sheet sizes down to 100 mm x 300 mm size can be stacked regardless of material type. The two-sided stacking mechanism is fast, gentle, and provides good support for stacked parts. While smaller in size than previous models, the new stacking system offers increased capacity, faster component flow, and the possibility of versatile layout planning as the entire material flow can be handled from one side. Equipping the production cell with an optional drive-through system allows further integration of an automatic bending cell; thus the entire process from sheet stack to ready-bent components becomes automatic. ■

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