

THREE-PIECE CANMAKING

STEP-CHANGE FOR WELDING

Productivity, simplicity and ease of maintenance have been the key planks for Can Man Engineering's medium – speed welders. Now add higher speeds and quick height changes. John Nutting reports

Significant improvements to body welding technology are rare events. Operators on three-piece can lines prefer what they know, so even step-changes in weld quality and productivity such as the use of weld monitors or electronic frequency converters were initially regarded with suspicion.

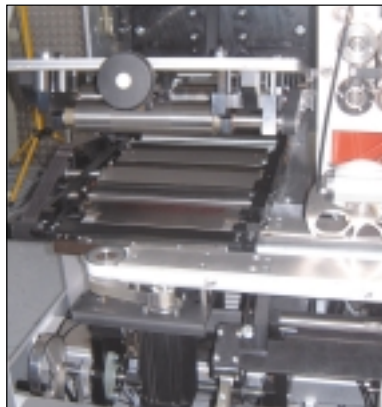
But Swiss engineer Rüdi Umbricht listens — and responds — to his customers. And what they want from their machines — in addition to a good price — are higher speeds and quicker size changes. That's why the latest welder from his company Can Man Engineering Works offers the unprecedented combination of a welding speed of 90 meters per minute and a height change in up to five minutes.

But the X1, which is Can Man's first foray outside the manufacture of low- and medium-speed welding machines and will soon be in action at a customer's plant making cans at up to 600 a minute, is much more than that.

Umbricht, 40, admits he is passionate about making sophisticated machines for three-piece canmaking lines that are just right for his customers. "We designed the X1 from listening to what our customers wanted over the last year," he said when we were given an exclusive view of the new machine at his manufacturing centre near Zurich.

And he is also passionate about simplification in design. "My philosophy, my objective in design, is to produce a machine that's nothing, but which makes cans," he says with a grin.

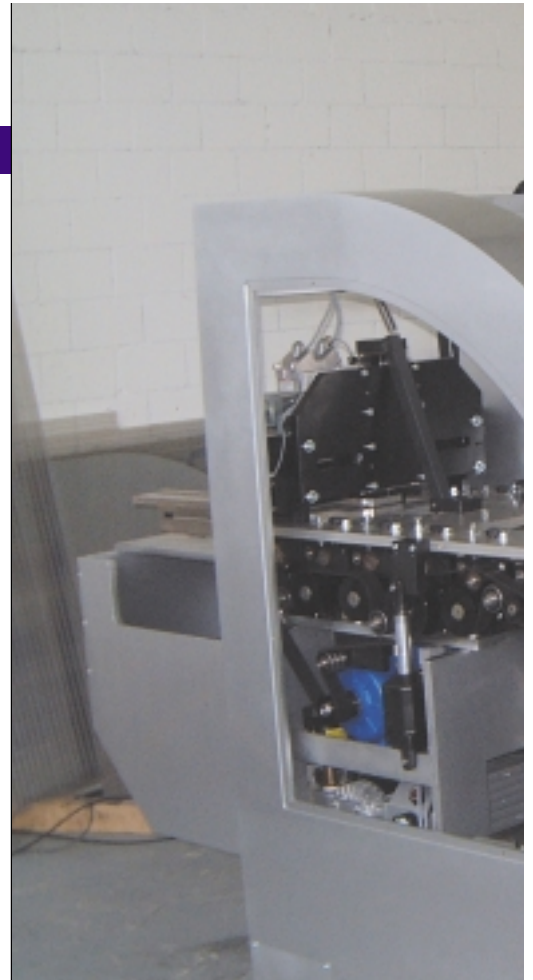
The X1 is another step on the path to that objective. The basic functions of a welding machine have been distilled to improve both its operation and output. And while it looks unlike any other high-speed welder — the rounded enclosure follows the theme of the earlier Can Man models — it also sounds unlike any other:



there's no clattering of chains, just the smooth click of the feeds. For access to the roll former and the feed mechanism, the press of a button activates pneumatics that quietly hiss.

Undramatic though the X1 may sound, it's a logical development of Umbricht's CM range that started with the simple CM18 automatic welder in 1994. The company had been founded earlier to produce solid-state frequency converters as upgrades for other manufacturers' welding machines.

Experience with SAG, Fael and SMAG



welders showed Umbricht that improvements could be made, but after a dispute with their manufacturer he set up independently to make his own versions. Since then Can Man has developed seven different models of semi-automatic and automatic welder with speeds up to 55 meters per minute and outputs of up to 300 various sizes of cans per minute.

Last year he launched the world's first design of semi-automatic welder that didn't require a calibration tool. But all adhere to the concept of simplicity. "I believe in simplifying systems," he says.



Parting and flanging for 'stepped' bodies

A machine that vertically parts, separates and flanges can bodies that are slightly stepped has been developed by Cheng Shin Enterprise Co.

Called CS-903-PSF, it contains three workstations each with 24 heads: six parting, six separating, and 12 flanging. While bodies may often be stepped by between 0.2-0.3mm in a welder, the machine can tolerate up to 0.5mm.

Double-reduced tinplate cylinders down to 0.17mm gauge can be parted and fed into the flanger. The machine is suitable for diameters between 62 and 84mm and heights of between 40 and 100mm after cutting. Production speed of parted cans is up to 1,200cpm.

More information from Cheng Shin Enterprise Co Ltd, No4, 40 Alley, 228 Lane, Tair Shi Nan Road, Jong Her, Long Jing, Taichung Hsien, Taiwan. Tel: 886 4 2630 2374. Fax: 886 4 2630 2370.

Swift height changes without change parts



Height changes are achievable in minutes on Blema Kircheis's Gamma body former, now that a motor-driven height adjustment has been added.

Suitable for cans with heights of between 40 and 320mm, the Gamma can be configured with between four and 12 heads, providing production of 250 to 1,200 cans a minute. Height is programmed using a touch screen PLC to an accuracy of 0.01mm.

More information from Gebrüder Leonhardt Blema Kircheis GmbH & Co KG, Bahnhofstrasse 63-65, D-08280 Aue, Germany. Tel: 49 3771 278 221. Fax: 49 3771 278 241.



Can Man Engineering's Rüdiger Umbricht demonstrates the weld wire feed system on the new X1 welder (above). Far left shows the simplified control panel, the press-button height adjustable roll former, the infeed downstacker with its linear feed and the simplified electronics board for weld monitoring

enable height changes to be made automatically, the design from the downstacker to the weld arm was improved (and is covered by pending patents). On earlier machines the blank width in the roll former could easily altered using a finger screw but now it's driven by a motor. There's no intermittent drive in the can body transport system, this function now being performed by a linear motor that can't burr the edges of the blanks at higher speeds.

Use of a lightweight transport belt means that pitch changes to accommodate can height changes are no longer needed. Instead two adjustable servo drives are used to provide the appropriate speed.

The time saved on a single height change equates to between 100,000 and

"They are less trouble, require fewer spares and are easier to manage." And with 130 welders in the field — mostly in Europe but with many in south east Asia — it's a strategy that can't be argued with.

Some might say that simplicity means the Can Man design is unsophisticated. Far from it. When Umbricht invests, it's in people and design, so he's got a top electronics team on hand and robust Cad-Cam systems that enable both assembly and dynamic component analysis.

This resource has been applied to the X1 throughout its systems. Firstly, to

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200,000 cans, says Umbricht. "While others still fight with complicated step-by-step changes and fine tuning, the X1 operator is at full speed," he claims. The feed into the weld rollers has also been refined with a mechanism that offers almost straight line motion.



Changes to the weld arm design provide the second benefit. Energy consumption is reduced by up to 40 percent, or "several thousand euros a year" says Umbricht. To minimise overcooling and its associated condensation, the machine uses temperature sensors linked to the main PC controller rather than flow meters. This also means that the welder runs at the optimum temperature, which can be achieved in a minute after start up, using a system called Can Man Temp-guard.

The third design feature addresses a key challenge on welders: heating in the copper weld wire resulting from stray current. This is overcome by a large liquid-cooled pulley that's placed immediately after the upper weld roller, so that heat is not transferred to the following pulleys. Electrical controls also help reduce the wire temperature. This is also part of a wire-handling sub-assembly that's removable to maintain alignment. It also uses the wire chopper as the secondary wire drive, a feature providing automatic wire tensioning that was first used on the CM16 some years ago.

Finally, the calibration crown, normally a complex set of parts, is based on one support and is set up away from the welder.

As on Can Man's other machines, the electronics have been simplified and integrated into the control systems. So the frequency converter is fully digital, enabling finer control the weld current, even at 4,000 amps or more. A new design of weld monitor called the Qualimaker is a standard feature on the X1 but is also available as an upgrade for existing welders.

Umbricht is acutely aware of the need for customer support. "We know that we must build the best welders, we must have the best after-sales service and we must provide the best technical benefits because we can't look back on a 50-year history, nor can we live on spare parts sales," he says. "We are a very young company and we came up with innovations, readiness to respond to customers' demands and a straight-forward business style with the minimum of compromises. There's much more to come. Trust us."

More information from Can Man Engineering Works, Mülistacker 221, Halwill, CH-5705, Switzerland. Tel 41 62 777 4440. Fax: 41 62 777 4441.  

Wire monitoring from welder upgrade kit



Wire speed on welders is automatically regulated using Sabatec's conversion kit

A frequency-controlled conversion kit designed to replace speed regulators for wire profiling and chopper units and crank drives on welders has been developed by Sabatec.

Called DRKU1300, it can be mounted onto all welders and automatically regulates the wire speed without manual adjustments.

The company has also introduced an updated retrofit Saba-Frecon welding frequency converter.

More information from Sabatec GmbH, Seetalstrasse 2, CH-5703 Seon, Switzerland. Tel: 41 62 775 0502. Fax: 41 62 775 0508.



Quick format changes are a feature of Juan Capella's latest DRAC pail making system for sizes from three to seven litres

Powder seam quality control from digital screen

A digital touch screen panel has been added to Frei AG's XPC powder seam coating unit, enabling users to monitor the quantity of weld powder applied with higher precision.

The screen displays data from a save-Pro inline monitor which measures the coating before the powder is melted, says the company.

The single module XPC system is suitable for can diameters between 52 and 230mm and operates at welding speeds of up to 115 meters a minute.

More information from Frei AG, Hofenstrasse 18, CH-9303 Wittenbach, Switzerland. Tel: 41 71 292 3434. Fax: 41 71 292 3400.

Height changes at the touch of a button

Spanish canmaking machinery manufacturer Juan Capella has introduced a new model in its DRAC range for making general line pails in 1, 5 and 25 litre sizes.

The DRAC 5/7 is designed for medium manufacturing speeds with frequent size changes and forms containers in sizes from three to seven litres at 40 per minute.

The machine is described as compact and in seven stations tapers the body, necks and flanges the top, neck, flanges and curls the bottom, seams the bottom and then seams the ring or the end to the top.

Automatic changes using servomotors controlled by Siemens electronics are possible from a touch screen. A change from tapered to straight containers takes less than five minutes.

More information from Juan Capella, C/ Volta dels Garrofers 43, Vilassar de Mar, E-08340 Barcelona, Spain. Tel: 34 93 750 2322. Fax: 34 93 759 5311. 