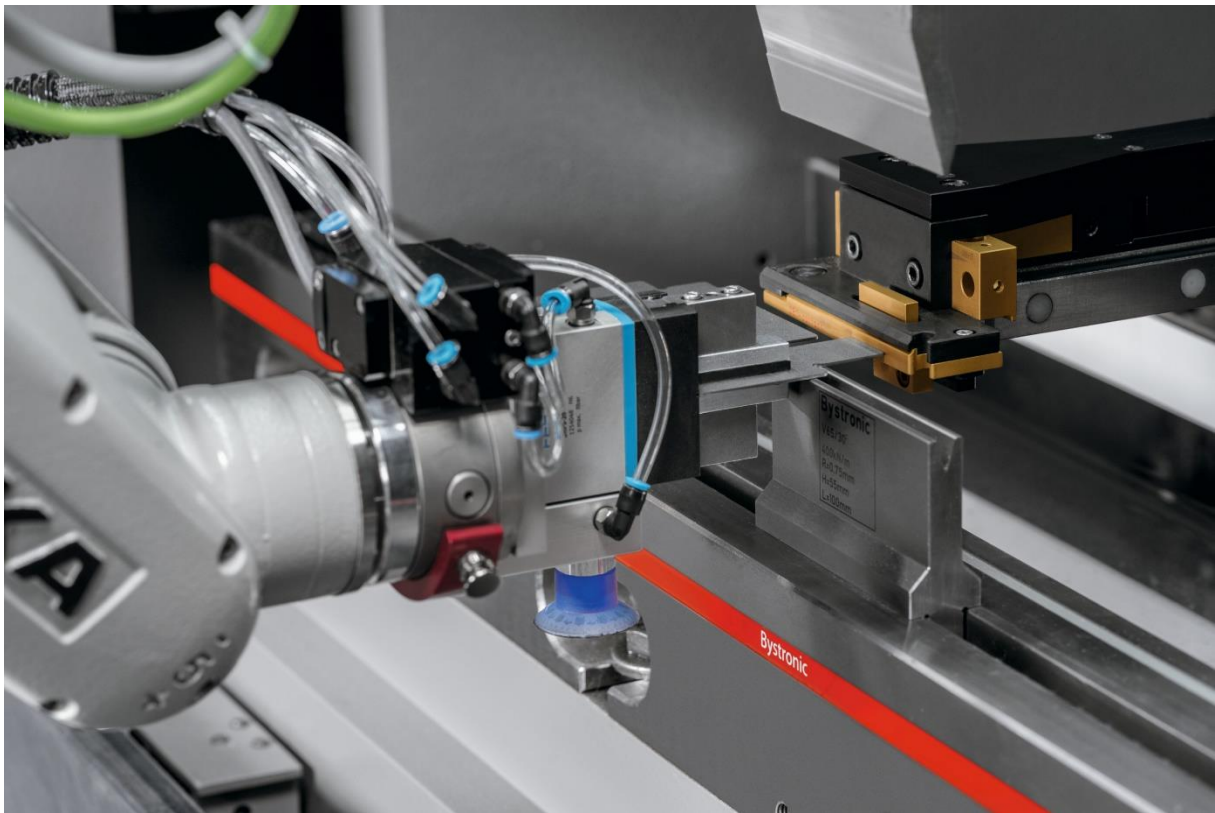


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Bending processes with increased flexibility: a microswitch detects when the sheet metal is positioned against the back stop and notifies the automation unit via a wireless signal.

More flexibility for bending processes

Optimising the combination of machine, automation and wireless technology means more flexibility for bending processes.

Flexibility is an increasingly important factor, and not only in forming and metalworking "job shops". Mass manufacturers of serial products sometimes also have to process small batches and can see the benefits of being able

The cell facilitates fully automated bending processes in unmanned shifts.

to switch between fully automated and operator-controlled bending processes.

Bystronic has brought additional flexibility to folding and bending processes with its 'Mobile Bending Cell'. Docked on to its Xpert series of press brakes, the cell facilitates fully automated



The Xpert series from Bystronic stands for all-round bending and folding with high precision.



Flexible and precise: the Xpert 40 is known as the 'Swiss army knife' of press brakes.

bending processes in "unmanned" shifts. And without the robot module, the Xpert is also the ideal machine for highly efficient and precise operator-controlled bending. The automation unit communicates with the press brake via remote technology from the steute Wireless range.

Fully automated production overnight

When one machine is able to handle both options, larger series can be manufactured fully automatically by robot in one shift (ideally overnight), while operator-controlled production of smaller batches or very complex parts can take place in the next shift. This

The foot control is the human-machine interface.

basically means that users have two machines for the price of one. And that is precisely the advantage offered by Bystronic with its tried and tested Xpert series – known as the 'Swiss army knife' of press brakes – in combination with its 'Mobile Bending Cell'.

Foot control as interface

The smaller Xpert presses are designed for all-round folding of small parts with high precision and speed. The foot control serves as an interface between the machine and its human operator, who positions the sheet metal up against the back stop and presses the right pedal. The upper cheek of the press brake then moves down and bends the metal as desired.

Bystronic offers users the choice between cabled and wireless actu-



Karsten Trautvetter von Bystronic (left) and Andreas Schenk from steute.

ation. The cabled variant features a GFS 2 VD two-pedal foot control from the steute range, developed specifically for metal forming applications.

Jolt-free press strokes

A special three-stage switching insert enables press strokes to be triggered without any jolting movements, an occurrence which would not be preventable using "normal" switching inserts. With the wireless version of the GFS 2 VD, signals are transmitted remotely via the sWave-safe wireless system developed by steute for machine safety. Karsten

"The board is provided by steute, we then integrate it in an enclosure and offer the complete system."

Karsten Trautvetter

Trautvetter, Product Manager Bending: "We are happy to promote the idea of wireless foot controls for our machines because they offer users improved ergonomic comfort and also increase availability by eliminating the possibility of cable damage."

The wireless option is popular with press brake operators, and the foot controls quickly achieve a high number of switching cycles.

Three times the speed

Karsten Trautvetter: "When the presses are operated in three



The foot control – cabled or wireless.



Docked on: the Mobile Bending Cell means that even a conventional press brake can be automated.



Inside an open Mobile Bending Cell.

shifts, the switches can achieve over 1.8 million switching cycles per year."

This is especially true of the smallest Bystronic model, the Xpert 40, which produces smaller bent parts at three times the speed of larger press brakes. The Xpert 40 is very popular in the industry because of its flexibility and universal applicability.

Monitoring battery status

When using wireless switching devices, one critical point is battery status. This is especially the case when machines are working continuously at high levels of productivity, as is often the case with press brakes. Karsten Trautvetter: "The question arises for our customers and needs a neat solution." The monitoring problem was solved when steute developed an additional module for Bystronic, a so-called

The mobile robot cells mean that even existing Xpert press brakes can become automated.

'extension board' enabling the battery charge level to be communicated to the control unit of the machine. Trautvetter: "The board is provided by steute, we then integrate it in an enclosure and offer the complete system. Existing machines with cabled foot controls can also be retrofitted for wireless operation."

But this is not the only wireless switchgear application for Xpert presses. Bystronic has developed a solution which meets the abovementioned demand for flexible automation of bending processes head on: the 'Mobile Bending Cell'.

Mobile cell simply docks on

Operators of "completely normal" Xpert press brakes can purchase this mobile cell as an additional module and dock it onto the bending press as

required. In the cell there is a six-axis robot which communicates with the press brake autonomously. It removes a sheet of metal from the integrated storage tray, positions it precisely, initiates the bending process, changes its grip repeatedly as required, then ejects the finished part.

At night the robot takes over

The 'Mobile Bending Cell' opens up a wealth of new possibilities for press brake users. Karsten Trautvetter: "During the day shift, operators can produce small series flexibly and manually. At night the robot cell is docked on – which takes just ten minutes – and then the same machine goes into serial production for an unmanned shift. This is flexible automation at its very best."

One of the prerequisites for automated operation is sensing of the back stop which the sheet metal is pushed up against before bending. This task is assumed by a microswitch with an extremely short switching travel which detects precisely when the sheet metal is in the correct position.

The developers faced the question of how to transmit signals between the press brake and the robot cell. Once again, wireless technology from steute was part of the solution. Bystronic provides the micro-switch, while steute supplies the corresponding wireless module, the receiver and also the antenna, integrated in the robot cell.

Here, too, Bystronic is responsible for a major part of the production process. Karsten Trautvetter: "We produce the enclosure with a battery holder and then integrate the steute wireless technology."

Unique automation concept

Bystronic thus developed an automation concept which was not only new, but also unique and truly innovative, immediately arousing a great deal of interest in the industry. It did not take long for the first Mobile Bending Cell for the Xpert 40 to grow into an entire series, including variants for larger Xpert press brakes with folding lengths of up to four metres. Automation can now be planned according to requirements and therefore completely flexibly.

The mobile robot cell also means that existing Xpert press brakes can be retrofitted for automation. Only the back stop needs replacing, with a "wireless contact finger" being installed which can then communicate with the robot cell via the wireless module. Wireless technology is thus behind an essential move towards flexible automation processes taking place in companies throughout the metal forming industry. Bystronic is catering to a huge need in the industry, as shown by the current high demand for the Mobile Bending Cell.



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