

THE BENDING EQUATION

ISMR SAYS:

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On **10 October 2017**, bending specialist Jean Perrot and its partners Radan, Mate Outillage France and CLEIA welcomed over 100 customers and 250 delegates at Jean Perrot's headquarters at Chalon sur Saône, France. It was the partners' first technical open day based upon the innovative Bending 4.0 concept. Its E COBOT-BEND solution, told *ISMR*, offers a new approach to global bending.

"During the event, we shared our latest innovations with our customers. We introduced the E COBOT BEND, a collaborative robot linked to our Maneo Premium press brake. The Maneo Premium 1000T version featured dynamic hydraulic crowning and Tool Box XXL. We demonstrated 3D vision with the robot and highlighted the customised HMI (Human Machine Interface) on the Maneo Premium with special preventive maintenance pages," explained Erick Rousseau, Business Unit Manager, Jean Perrot and Project Department Manager, Pinette Group. "We also showcased our new Maintenance Contract 4.0, with Augmented Reality (AR) technology, as well as a Special Tool Box to feed two press brakes, installed next to each other. Visitors on the day could also see our shear with a rear belt to recover any cut parts to the front of the machine."



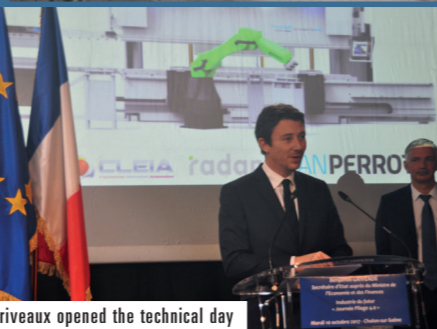
Official opening of the technical open day

The technical day was opened by Benjamin Griveaux, Secretary of State of the French Ministry of Finance and Economy.

A focus on innovation

Innovation based on customer need; safety; comfort; worker ergonomics and productivity, are key points for the French bending specialist.

"The market is changing. It is becoming more and more difficult to find skilled workers. The sheet metal industry is also becoming more competitive, so productivity needs to be improved. Worker safety also needs to improve. We therefore decided to focus our innovation initiatives on methods of operation, safety and productivity," explained Erick Rousseau.



Minister Griveaux opened the technical day



Minister Griveaux bends a metal sheet

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"2017 is a special year for us because we have changed and updated the design of our machines, launched a new website and are launching new bending innovations. This special 4.0 Bending Day, with our partners, on **10 October 2017**, was our opportunity to present the new E COBOT BEND solution to our customers. I believe that this is really the first solution of this type for the sheet metal bending industry. In the last two years, we have significantly multiplied our turnover thanks to the innovation and work of our R&D teams. Innovation must have a tangible purpose and benefit, otherwise it is not worth doing..."

There are three modes to the E COBOT-BEND solution. In the first mode, the robot will work with the human operator. The robot will load the sheet metal, the worker will bend the part and the robot will unload the bent part. The operator will therefore only spend his time bending the part.

In the second mode, the robot will load long parts onto the press brake. Generally, a second worker usually helps the operator to load and bend long sheet metal parts. So, instead of using a second worker, the operator will work with a collaborative robot instead. There will also be a guidance aid on the system. This is an option where the operator can decide the path/location of the robot – he can move the robot to any position he wishes.

The third mode will be a fully automated option. The operator only works during the day but, at night, the bending operation is



An AR demonstration



done by robot. This option offers lights-out machining, even at lower speed, for high- or low-batch production.

All three options are designed to avoid injury to the human operator and increase overall productivity.

Augmented Reality (AR) is also part of the E COBOT BEND project, especially for the collaborative robot on the press brake. We will use AR for two things; the first is for predictive maintenance. We selected one make of glasses in the market and developed some software to use with the glasses," said Rousseau.

"The customer will be able to use the glasses to call our maintenance department, for troubleshooting and repair of the machine to try to decrease machine downtime as much as possible. The maintenance crew here will be able to see exactly what the operator sees on the machine (such as the tooling, stats/data) etc. So, the press brake operator will be the eyes and we will be the head... The second avenue for AR will be for training press brake operators who, when wearing the glasses, could be trained by the specialists based at our offices in France."

Jean Perrot will announce its preventive and predictive maintenance initiative for the press brake at the Tolexpo exhibition next year, in its quest to develop new innovations and new technology around the press brake. Erick Rousseau talks about Plage 4.0 (Bending 4.0) as the virtualisation of this new technology, with AR as the first step. The second step will be the collaborative robot on the press brake, which is a relatively new step for the sheet-metal industry and a potentially important contribution to safety for press brake operators.

New directions

Jean Perrot has a history of developing award-winning products – its Maneo Premium LCS press brake/bending system, with laser-control system, won the Tolexpo sheet metal award in November 2015. Press brake technology has now developed to such a degree that, Erick Rousseau told *ISMR*, 'you can now compare a press brake to a milling machine in terms of accuracy'. The company has also developed robotic bending cells and tandem press brake lines for customers in Europe and successfully launched its Toolbox one year ago.

"The Toolbox is a manual toolbox which enables the tool line to be changed in less than ten minutes (instead of 40 minutes). Tool-change can be a heavy and demanding job for press brake operators. To avoid this, the Toolbox is installed on the side of the press brake so that tools/dies can slide onto the guide and new tools/dies can be installed. Sliding, rather than lifting, protects both the operator and the tool - key for health and safety. It is a manual, rather than automatic, process as this is more affordable for companies and means that there is no downtime on the press brake if the robot is out of order. It also means that, in one year, there is full Return on Investment based on two tool changes per day," said Rousseau.

Erick Rousseau is also focused on developing new overseas export markets for Jean Perrot, as the majority of its customers are in France. He has accordingly hired new sales staff and agents, and is actively looking to engage new agents for service and support functions in other global markets, including China.

"There are lots of competitors in the press-brake market. You must therefore bring something new to the customer to stand out from your competitors – new technology, new innovation and new services," he told *ISMR*.

With the company's strategic direction very firmly fixed on Bending 4.0, he has a new and exciting path to forge... ■

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