

# Drive & Motion **Solutions**

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**Industry:** Automotive, Machine Building, Metals

**Application:** Materials Handling

## Drives Stack Up to Steel Handling Requirements

A machine built for the handling and stacking of steel blanks of any shape and size for use in the automobile industry features the new Unidrive SP 'Solutions Platform' AC drives from Control Techniques. The Unidrive SP was selected for the unique combination of features it can provide, in this case, Profibus connectivity, on-board programmability, a secure disable safety function, and ease of programming from a PC.

A conventional stacker drops blanks onto a stacking pallet, with the possibility of edge or surface damage to the blanks. This stacker, designed by Specialist Stacking Systems Ltd. (SSS) carefully handles blanks, preventing damage, while simultaneously boosting handling speed by an estimated 50 percent.



“There was no other drive on the market that meets all our requirements for this particular job,” says Dave Caple of Transicon, the company tasked by the SSS with designing and building the complex control system for the machine. “It was essential that we had complete flexibility over every aspect of the drives’ performance from the outset. I was impressed that whatever we needed was there as a standard item on the drives, from communications to preset speeds and independent ramps and Secure Disable for complete confidence when we were working on the machine– and they were very straightforward to program too,” he said.

“Perhaps most important of all,” he adds, “ was the high resolution speed loop within the new Unidrive SP, which gives us  $\pm 1$ -mm accuracy on all the drives. This precision of control was maintained and was entirely predictable even at very low speeds.”

The stacking machine, designed by Dave Mardel at SSS, has to meet the particular requirements for side stacking in an area with a space of less than 14 feet. The machine also has to traverse so that operators can access and change dies on the press. A four-strand magnetic indexing belt for the initial handling of the panels brings the panels into the machine. Pneumatic fingers then push the blanks onto a loading conveyor that loads a stacking table, the orientation of which is adjustable  $\pm 90^\circ$  to suit subsequent automatic loaders. As the stack builds, the table moves down by degrees to accommodate new blanks and, when full, the stack is unloaded by conveyor.

All movements of the machine are controlled by Unidrive SP AC drives in closed-loop vector mode, with feedback from 560 ppr encoders to the controlling PLC, which, in turn, transmits a speed or position signal to the drives. All motors on the machine are vector motors from another Emerson company, Leroy Somer.

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## Drive & Motion **Solutions** (continued)

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Seven drives are used on the stacker, with 1.1 kW Unidrive SP drives controlling the indexing magnetic feed conveyor, the loading conveyor, the stacking table rotation, the ball-screw positioned tamper guide drives, and the unloading conveyor. The traverse drive is 2.2 kW.

“The drives are all pre-programmed using selectable pre-set speeds and ramps,” explains Dave Caple. “Using CTSOft it was very easy to program and other changes were programmed using the removable keypad – we only needed the one keypad for all seven drives,” he says.

“We have used the Secure Disable capability of the Unidrive SP’s extensively during the development process,” says Dave Caple, “and this is a good safety feature for the end user.” Safety relays monitor all of the gates on the machine with outputs to the drives, to initiate the secure disable feature preventing drives running while gates are open.

“We have used the features of the Unidrive SP extensively on this project,” concludes Dave Caple. “The drive’s flexibility and wealth of standard features have met all of our needs and more, giving us great confidence from the outset that it would meet all eventualities – and it has! An excellent product!”

Transicon specializes in multi-technology monitoring and control systems aimed at achieving process optimization. The company, provides programming and application of SCADA and PLC systems and designs and builds drive control systems to control process lines such as cut-to-length, slitting, multi-blanking, coiling and coating processes with the ferrous and non-ferrous strip, bar and tube industries.

Specialist Stacking Systems produces a wide range of machines for stacking ferrous and non-ferrous blanks and sheets of virtually any size or shape in different multiples either in width or length. The company confidently predicts a 50% increase in productivity against any conventional stacking system and additionally offers more careful handling, particularly important in the white goods and automotive industries. ■



*Unidrive SP parameters can be changed using a PC, one of two keypad options, or by inserting the storage/cloning SMARTCard.*

[Click here to access more information on the Unidrive SP.](#)

[Click here to download “A Guide to the Unidrive SP Secure Disable Function.” in PDF Format \(137kb\)](#)