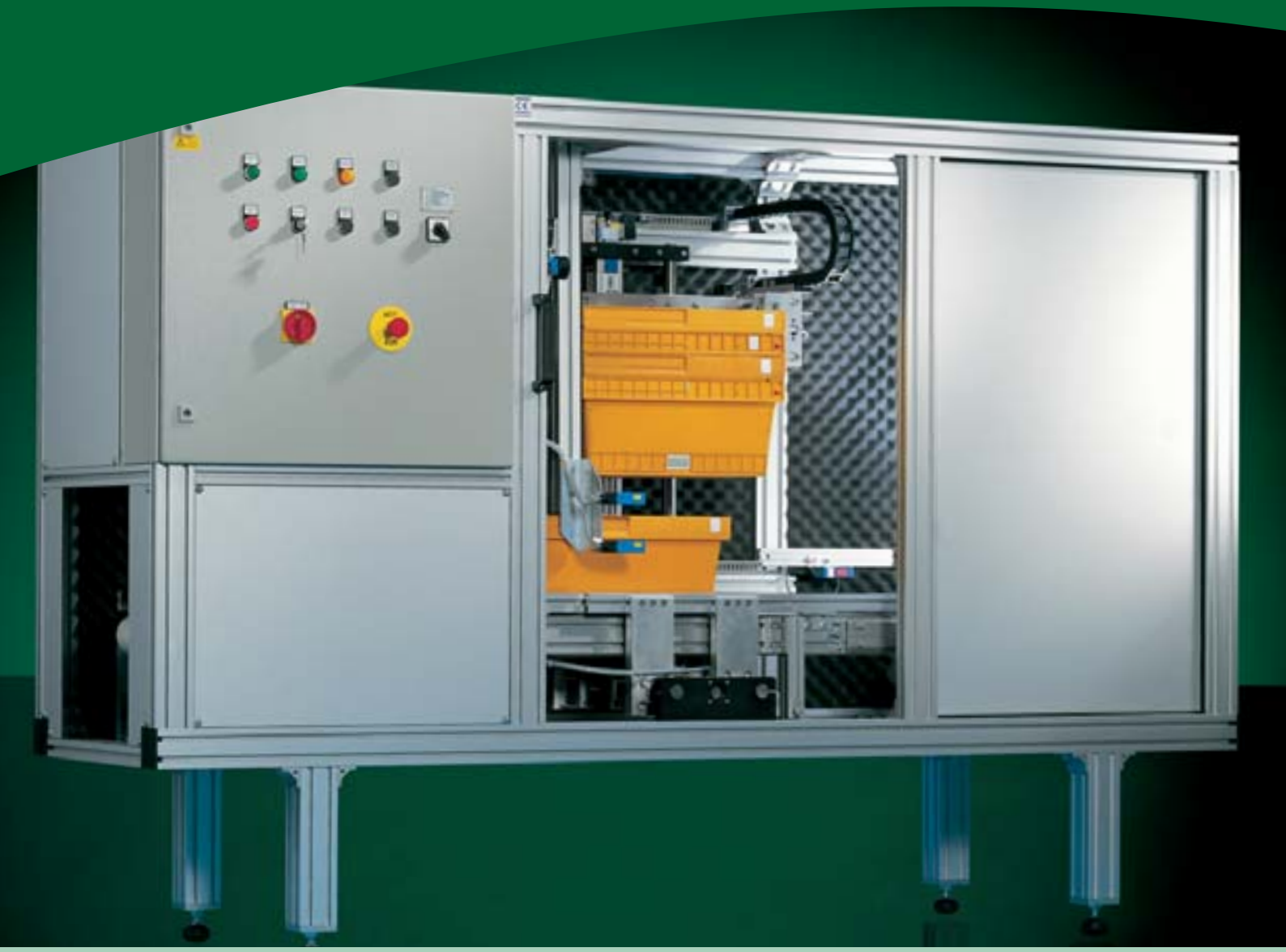
AMI handling technology

Pile them high



De-stacker, 1st method

Wherever bins, cardboard boxes, troughs, workpiece carriers or trays need to be temporarily stored without taking too much space and made available swiftly when needed again, AMI stackers and de-stackers are the equipment of choice.

For the stacking function, there are two possible methods: In the first method, the stack is moved up and down during each cycle. The bins, boxes etc. are fed individually and stacked one upon another. The principle of operation is that empty bins are fed on a belt conveyor to the automatic system and then taken up and lifted using a gripper. The second bin is then placed under the first one, lifted by the gripper system and then pushed into the first bin from below. This procedure is repeated until the stack is complete. In the second method, the first bin is fed on a belt conveyor to the automatic system and transferred to a second stationary gripper system.

The second bin is then placed under the first one, lifted by the mobile gripper and then pushed into the first one from below. The stationary gripper system is opened for a short time and then grips the second bin. This process is continued until the stack is complete. Finally, the stack is picked up by the mobile gripper system and placed onto the belt conveyor. De-stacking takes place in the reverse order.

Many designs

The major difference between the two stacking and de-stacking methods is that in the second method, the stack of bins does not constantly move up and down. This makes the process less noisy and more gentle for material being handled, yet it is not suited for bins of all geometries. It is the shape of a bin that determines whether it is gripped from the top or from the side.

AMI stackers and de-stackers can be fitted with various drives, depending on the actual requirements. Pneumatically driven automatic systems achieve speeds of up to 1,000 or even 1,500 cycles per hour. Automatic systems with a lifting shaft driven by a servomotor and belt conveyors operated by frequency converters even attain up to 2,400 cycles.

Well locked

Automatic covering systems produced by AMI enable the swift closing of bins mostly containing consigned goods. The stacks of covers, which are fed to the automatic systems, are lifted up to the required height using a lifting shaft. To achieve this, a light beam detects the edge of the uppermost lid. On a second synchronized track, the bins run through the machine and are placed besides the stack with covers. A handling unit made up of a swivel and a horizontal shaft as well as a double suction bar lifts the uppermost lid and places it on the bin. At the same time, the next lid is taken up on the other side of the bar. A special feature of the machine illustrated is that it can work with bins of two different heights.

The drives of the toothed belt conveyors and of the lifting shaft for feeding the covers operate by means of a motor and a frequency converter. The suction bar is pneumatically operated. Such automatic systems can achieve up to 1,800 covering cycles per hour.

De-stacker, 2nd method

De-stacker, fixed and moving cross beam

Automatic covering system

Automatic covering system, double suction bar

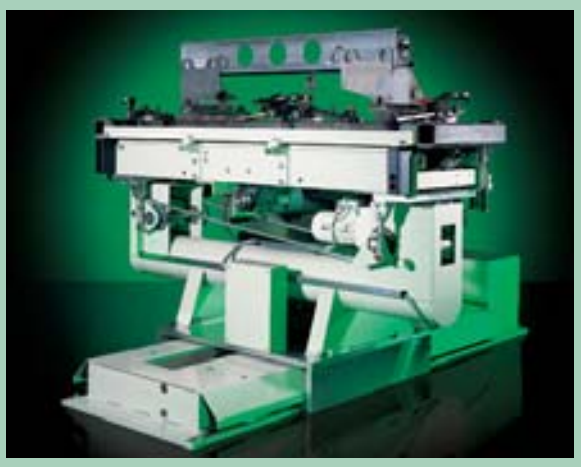
Well aligned

Tailored concepts

The AMI double axis handling unit combines a motor-driven swivel and lifting shaft to transfer workpieces. The mechanical interface is a moving table where individually adapted grippers can be fitted. This handling unit comes ready for connection complete with sensors, power cables and end

The highly dynamic axis combination of this AMI shuttle is used to move workpiece carriers beneath a welding robot. In changing workpiece carriers, every fraction of a second counts. The 11 kW horizontal axis moves more than 1,000 kg over a distance of 1 m in just one second. This is achieved with a repeating accuracy of less than +/- 0.3 mm using a servomotor. The lifting axis travels 80 mm in 0.5 seconds. In the example, four eccentric drives were synchronized using shafts and tie rods in order to suit the geometry. The drive is made up of a converter driven brake motor.

Two-axis handling



Shuttle

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