

From Stack to Rack

ABB StampWorld

The complete solution for Press Automation



ABB

ABB offers the complete solution for Press Automation. Our standardized products and pretested modular solutions reduce project risk, time and costs. They also ensure easy installation and maintenance. In short, they give you the best return on your investment. ABB StampWorld: All that is needed to guarantee a continuous and steady flow From Stack to Rack.



Experience & Innovation

The Doppin automation system for Press Automation was developed during 1971-1973 by Volvo. The first Doppin Lines were installed in Volvo Olofström and Volvo Torslanda in 1973-1974. During the early 1990's ABB Spain developed a standard for Press Automation with Robots. Robotic Solutions offered a higher degree of flexibility with good transfer rates at a competitive cost. In 1997, the experience of VOLVO was added to ABB through the acquisition of its Press Engineering group. This combination brought together the experience and knowhow attained from the completion of more than 500 automated Press Lines worldwide.

OEE

The three factors that define the Overall Equipment Effectiveness (OEE) are Speed, Availability and Quality. Our modular, standardized solutions help our customers improve the performance rate while also maximizing the availability of the line and quality of produced parts.

Flexibility

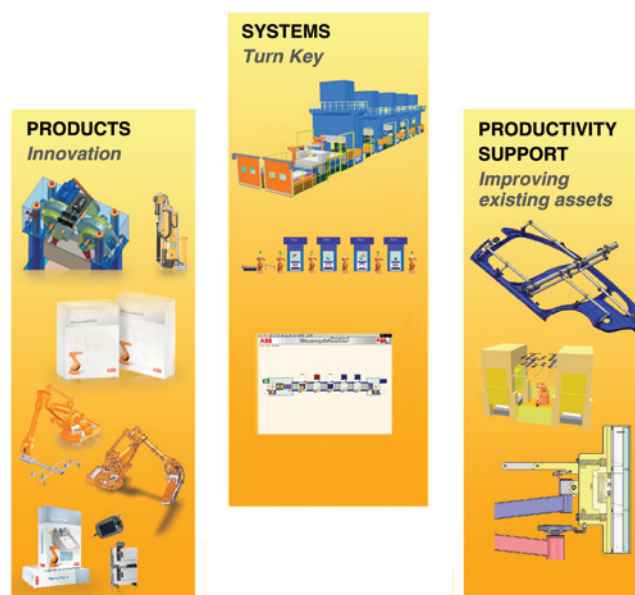
Our customers demand reliable press automation systems that can adapt quickly and easily to whatever the production demands. Our highly flexible solutions have been engineered to allow customers to produce a large variety of parts on the same line, with minimal change in robot programs. Automatic tool change and the capability to reverse or split the line are just two available examples of process flexibility.

Easy to use

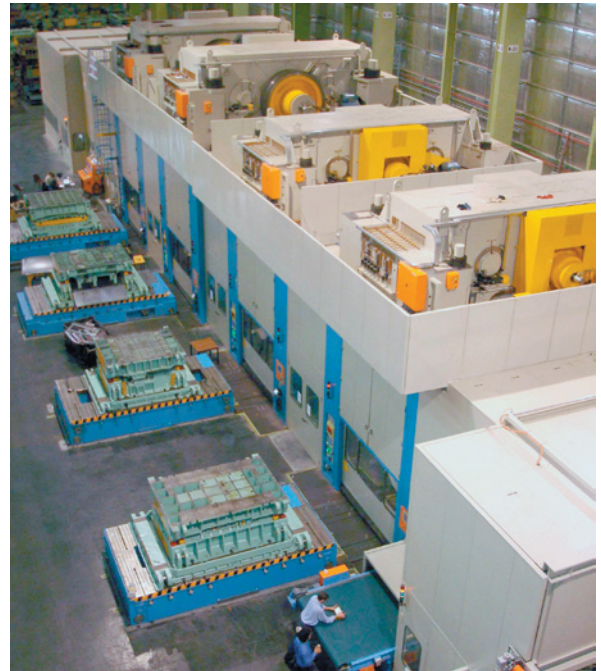
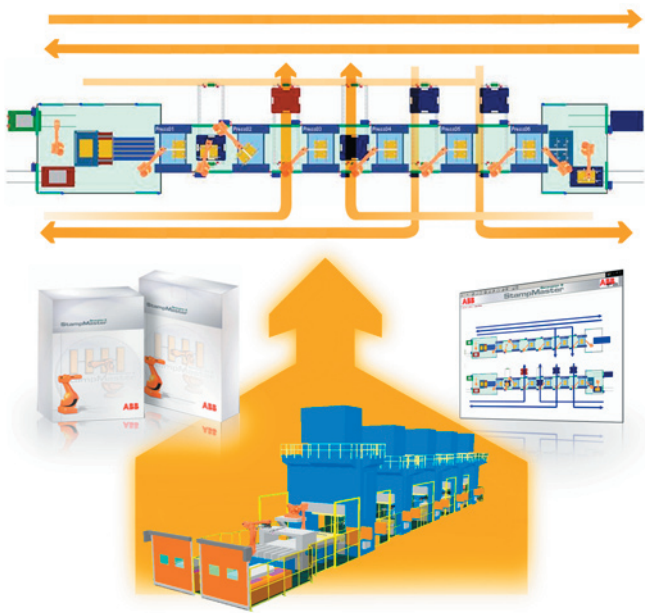
Our HMI, program wizards and supervision systems facilitate an intuitive use of the equipment. Our trouble shooting tools allow for a fast diagnosis and recovery to minimize downtime.

Safety & Environment

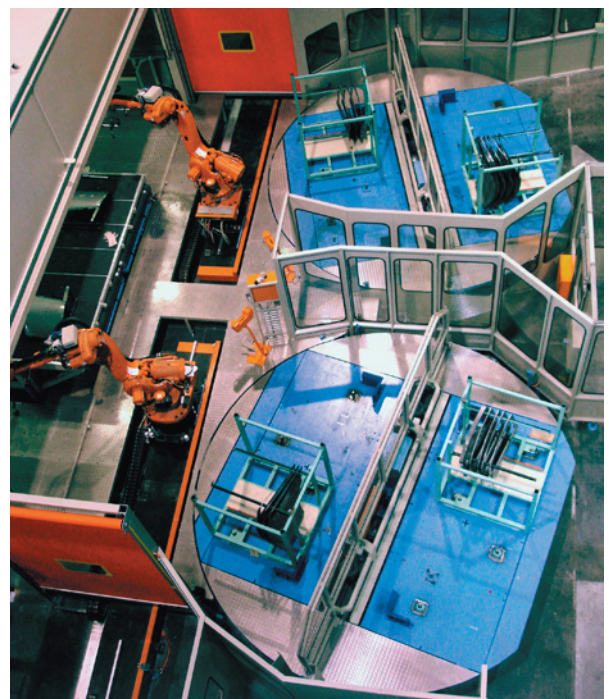
Our safety systems are engineered to comply with the highest EN and OSHA safety standards. Plus, we can offer further safety system enhancements tailored to your specific applications or your own company standards. These enhancements include, but are not limited to: Noise attenuating safety guarding and State-of-the-art safety technology based on a dedicated safety PLC.



Flexibility: Working modes configuration



Simplicity and efficiency through Standardization



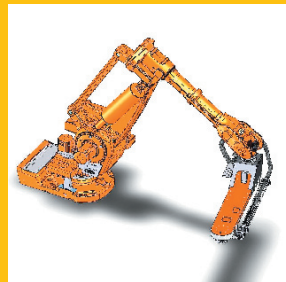
PRESS AUTOMATION ROBOT RANGE		DOPPIN PRODUCT FAMILY	TOOLING
6 Axis Robots <ul style="list-style-type: none"> • IRB 66XX / 2.2-3.2 • IRB 6650S / 3.0-3.9 • IRB 7600 / 2.8-3.5 	7 Axis Robots <ul style="list-style-type: none"> • IRB 66XX 3.1-3.2 / Rotax 1300-1450 • IRB 7600 3.0-3.5 / Rotax 1450 & Linax 1800 	<ul style="list-style-type: none"> • Feeder PM2D3 • Transfer Shuttle • Turnover Shuttle • Unifeeder • Destackers 	<ul style="list-style-type: none"> • Quick change systems • Round Profile Tooling • Square Profile Tooling
INDUSTRIAL ^{IT} SOLUTIONS		PRESS	OTHERS
<ul style="list-style-type: none"> • StampMaster Line Supervisor • Stampware HMI Software • PickMaster Vision System • Robot-to-press Synchronization • Quality Control Software 		<ul style="list-style-type: none"> • Press Motors & Drives • Press Refurbishment • DDC: ABB Technology for Servo Presses. 	<ul style="list-style-type: none"> • Bundle Turnover

DDC

Servo Drive kit for existing and new mechanical presses (Servomotor+Converter).
 With DDC the line output improvement goes from 10% to 30% from high to low pressing speeds.
 On top of this, DDC enables mechanical presses to stamp at lower speed while keeping the overall cycle time by speeding up on the non-pressing part of the cycle.



6 Axis and 7 Axis Robots



StampMaster

StampMasterG2 is a new generation of line supervisors, developed by ABB to open the press line to a ,collaborative process,, but without forgetting the basic functionality of SCADA systems such as visualization tools and human machine interface. StampMaster G2 is able to link a whole range of activities fi eg, scheduling, production, maintenance, quality, enterprise resource planning fi in the press shop.



StampWare

StampWare is a family of controller software designed to make you more productive by minimizing the learning time and setup time of new production. The modularized program structure, the program wizard and the graphical production window - all together decrease the time for training that the operator and robot programmer need. As a result, the production is more efficient during installation, production set-up and optimizing of the robot cycle.



Doppin feeder PM2D3

Our Doppin solutions are focused at moving large blanks at high transfer rates. The loaders and unloaders are attached to the front and back of the press and move in two axes when transferring the blanks.



Tooling

The end-of-arm tooling consists of modular components that can be assembled in various configurations allowing for full flexibility for a wide range of products. The quick attachment feature of our tooling enables fast and efficient production changeovers.



TARGET: INCREASE PRODUCTION

ABB's solution for high production press lines has been developed focusing on improving every single component on the drive chain: Enhanced transfer systems, press drives and the interlinking of both.

7 Axis Robot

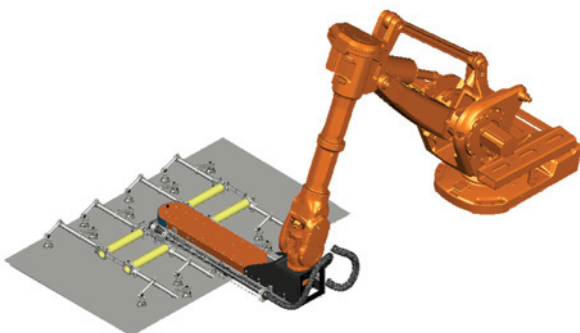
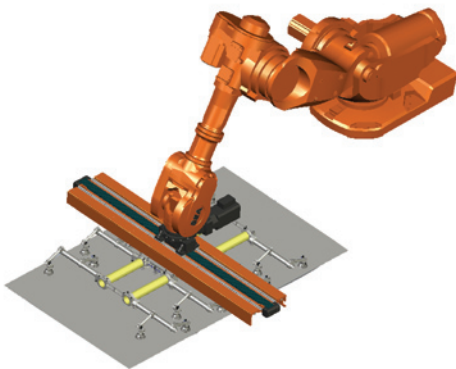
By maintaining the orientation during the interpress movement, the parts are moving smoothly, with minimum inertia and vibration. The robot cycle and the press occupation time are significantly reduced, resulting in a relevant output improvement. Also, in case of new lines, the floor occupation can be optimized by the reduction of the interpress distance.

Different kinematics are used for this purpose:

The RotAx maintains the orientation by combining the 6th and 7th axes rotations.

In the LinAx, a linear double action unit enables a linear part movement.

The robot wrist, including the 7th-axis motors and gearboxes are, at all times, maintained out of the dies when transferring the parts



DDC®: Dynamic Drive Chain

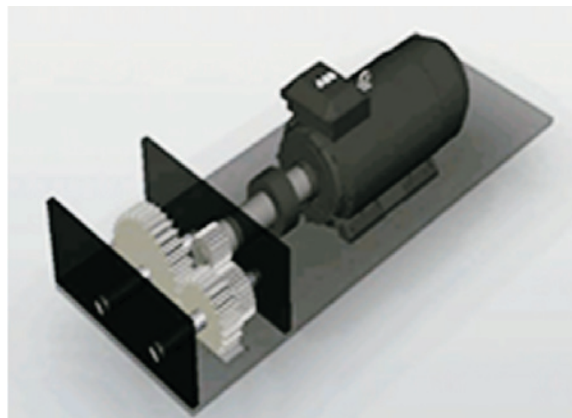
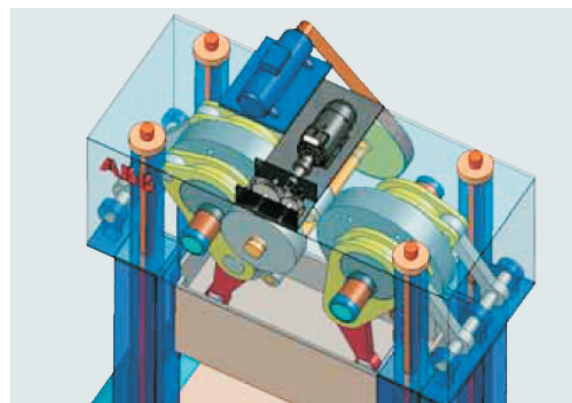
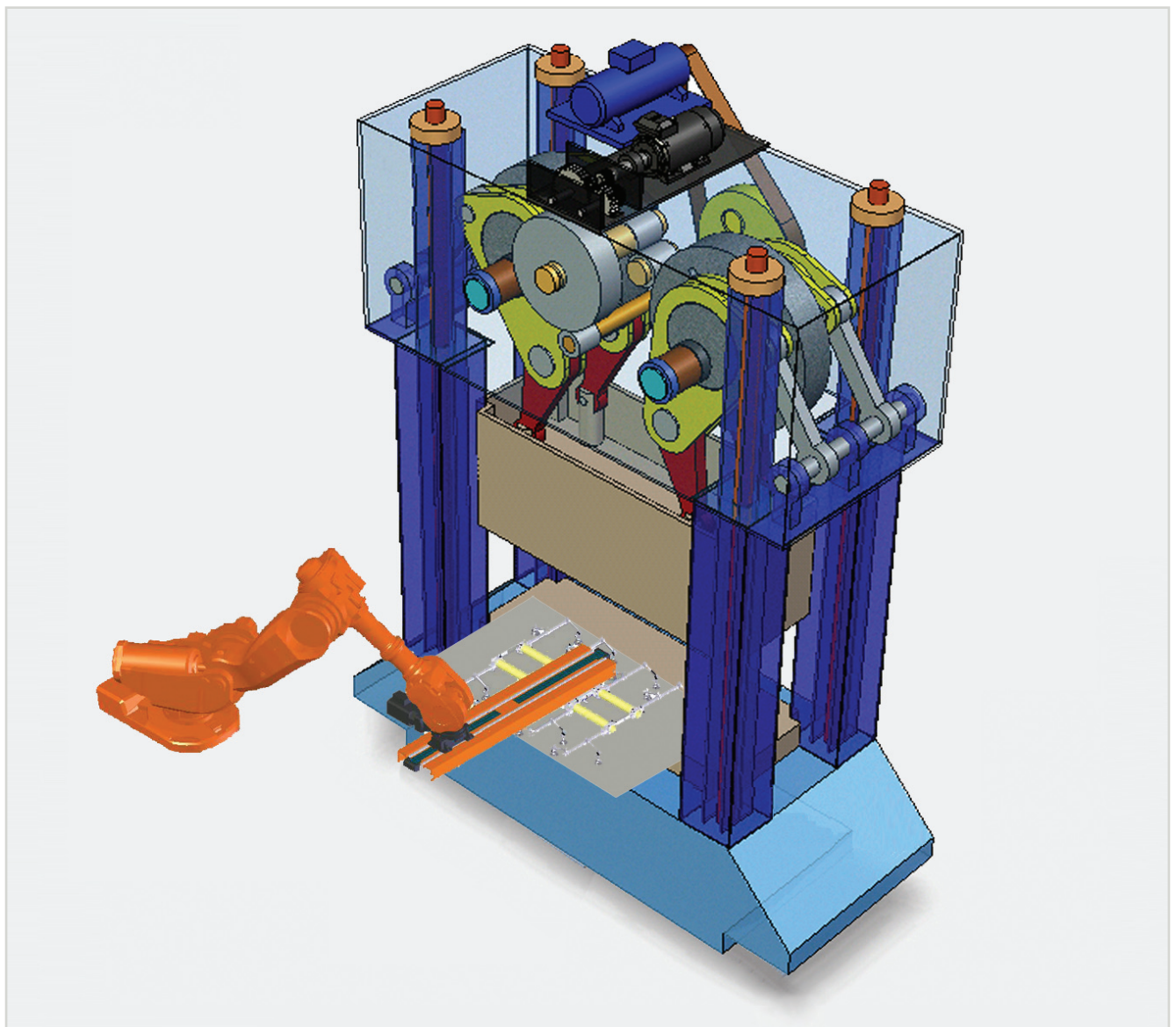
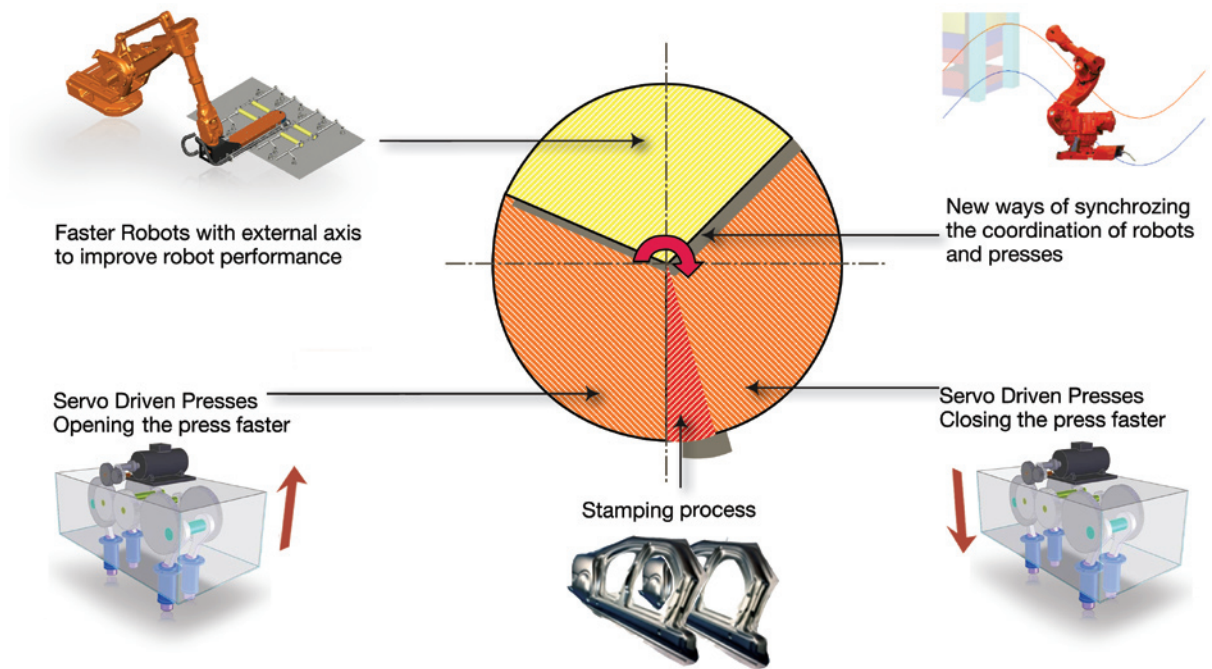


ABB has developed a new drive system for mechanical presses called DDC ®.

The DDC® enhances the press performance allowing for a better cycle time at a given pressing speed, resulting in improved productivity or improved quality, or a combination of these. The servo control of the press motion is further used for optimized synchronization with the automation, while keeping a smooth drawing. Synchronized clutching virtually eliminates wear of the clutch, and the traditional press brake is used in emergency cases only.

ABB proposes to the stamping industry the installation of the DDC ® drive into their new presses or for retrofitting of the existing ones.





Robot Performance Chart

Because we are driven by our customer, needs, we develop technologies to provide you reliability and fast working cycles. Using leading edge technology we optimize our systems for superior out-put levels.

LINE OUTPUT WITH PRESSES AT 20 SPM AND BIG

PARTS



IRB_66XX



IRB_6660



IRB_6660/RotAx



IRB_7660/LinAx

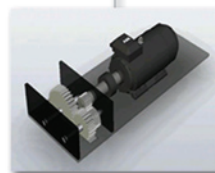
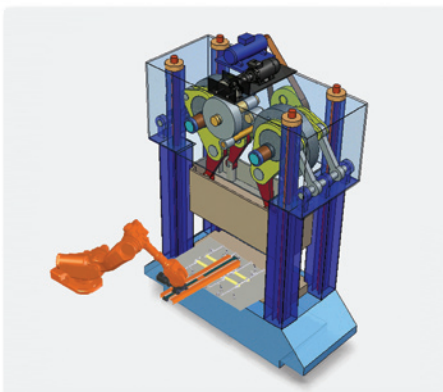
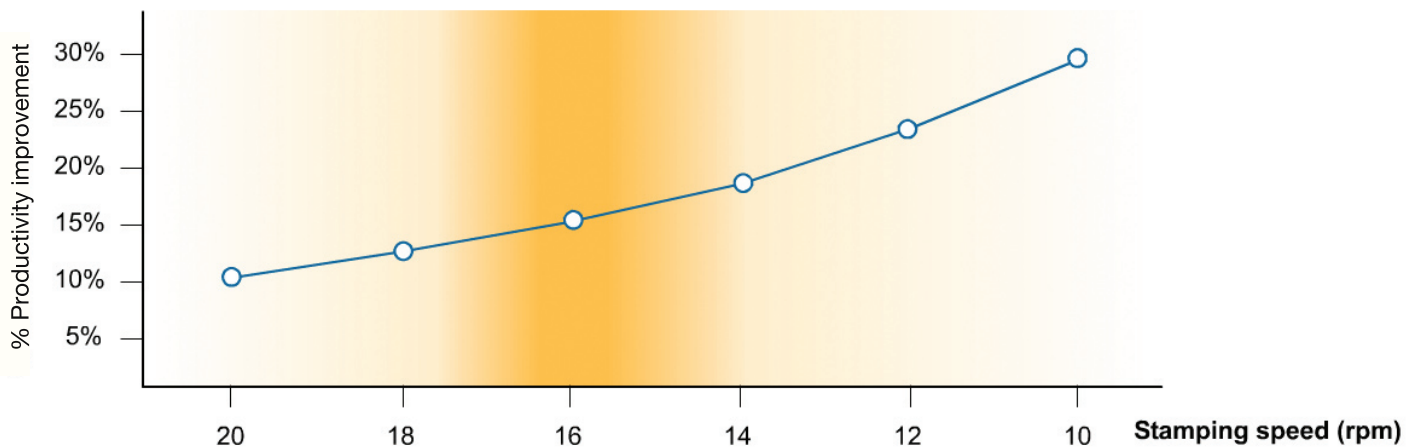
9,5 SPM

10,5 SPM

11,5 SPM

12,5 SPM

LINE OUTPUT IMPROVEMENT WITH DDC®



**Up to 30%
productivity
improvement**

ROBOT AND DOPPIN DESTACKER

When high production is essential, ABB can offer Fast Destackers based on either Doppin or robots Systems.

ABB Doppin Destackers are based on integrated components of Doppin system.

Both Robot and Doppin Destacker can be fitted with special separation equipment for handling aluminium or other non-magnetic blanks. Another feature which can be added is a vision system to locate the stack on the loading pallet.

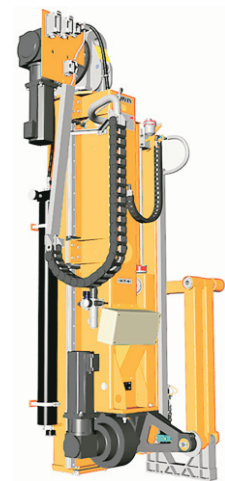
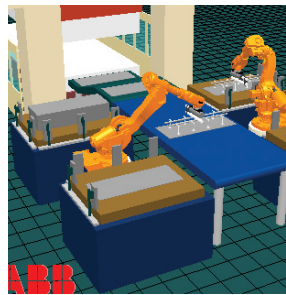
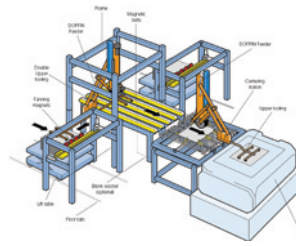
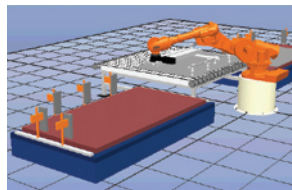
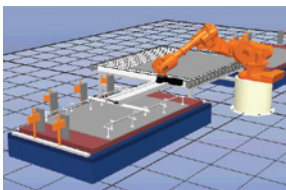
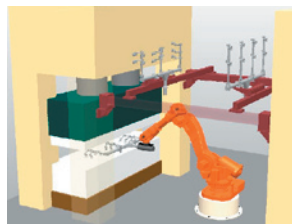
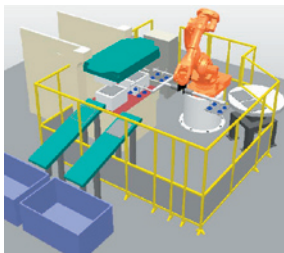


ABB has developed Lean Functional Packages offering standard solutions to renovate current production process, both for stand alone and transfer presses. These Functional Packages aim to increase the profitability, flexibility and safety of single cell systems.

Stand Alone Presses

The main objective of this function pack (multi-transfer) is to transfer parts between stages inside the press. Also the flexibility of this function pack allows for destacking and unloading of the press.

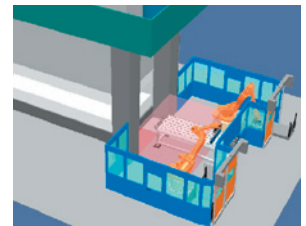
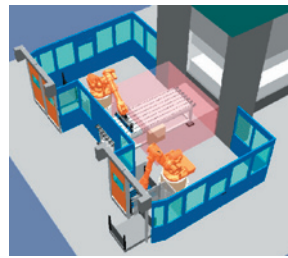


Key points for multi-transfer:

- Fully automated
- Destacking
- Loading
- Internal transfer
- Unloading
- Can run 7x24
- Short installation & commissioning
- Can be disabled to allow for manual operation

Transfer Presses

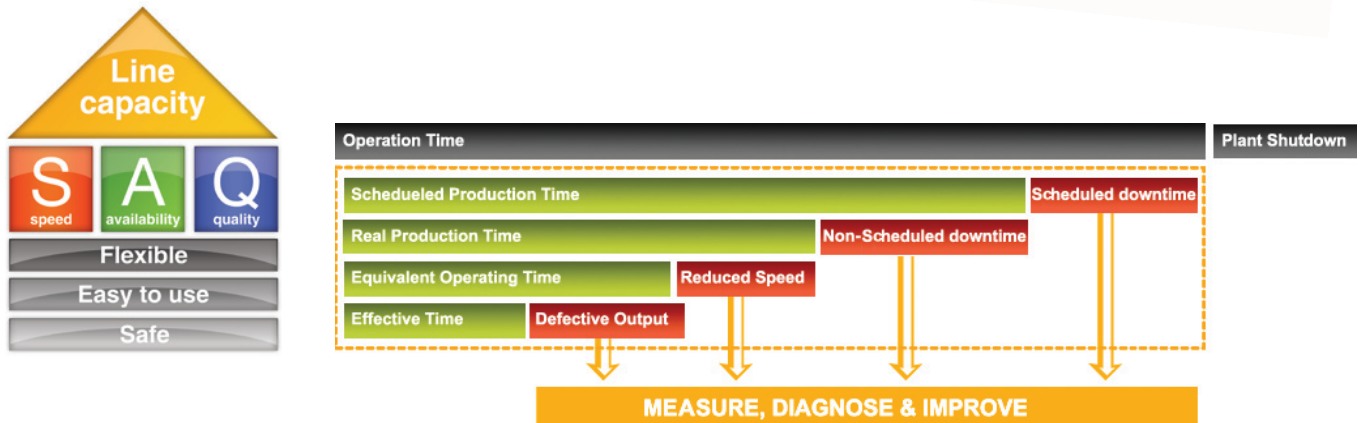
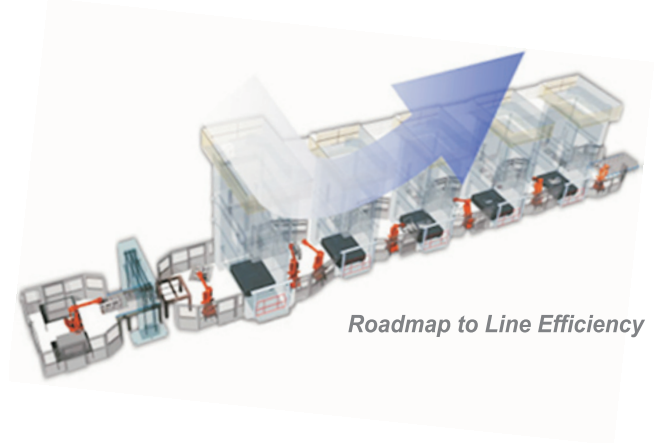
The main objective of this function pack is to load or unload parts for transfer presses. Also the flexibility of this function pack allows for destacking or racking of transfer presses.



Key points for transfer presses:

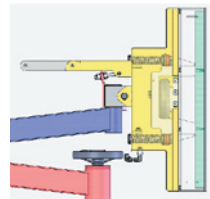
- Fully automated
- Destacking & loading
- Unloading & racking
- Can run 7x24
- Short installation & commissioning
- Can be disabled to allow for manual operation

Productivity Support provides a portfolio of Products, Solutions and Services focused on the three key issues that directly affect the Press Line Capacity: Speed, Availability and output Quality while making sure that the requirements for Flexibility, Ease of use and operators Safety are met. Our expertise is to support you in achieving and maintaining improvements in the productivity of your press line. From speeding up the line or increasing its reliability to monitoring the quality of the stampings.



Improvement on subsystems

- Press Refurbishment
- Robot Upgrade & Substitutions
- Doppin SM5 Upgrades
- System Control Upgrades
- Noiseproof Fencing
- Mechanical Upgrades



Integration of New Subsystems- ABB Prodcuts

- Synchronization
- PickMaster Vision System
- Tooling
- StampMaster Line Supervisor
- RotAx 7th Axis
- LinAx 7th Axis



Integration of New Subsystems

- Automatic Tool Change
- Lean Racking Systems
- Transfer Press Destacker
- Safety Systems
- Multi-Transfer
- Quality Inspection



Services

- OnSite & Remote Assistance
- Tooling Design & Built
- Line Optimization Audits
- Robot Programming new parts
- Training
- PLC Program Modifications



Integration of New Subsystems

- Robot Dress Packs
- Warranty Services
- System Spare Parts
- Warranty Spares



Our Customers

It has been more than 30 years since Volvo developed the doppin concept and more than 15 since the first ABB robot appeared in the press shop. With such long experience and hard-won expertise behind us, it's no wonder we are top of the race when it comes to automation of press lines.

In our view, highly satisfied customers are key indicator of operational excellence. This means being more likely recommended by customers than any of our competitors. And we want to achieve this by working with you from the early investment studies to the latest upgrade and refurbishment of your assets.

Global & Local

As a global supplier, we can offer standard and well proven solutions that allow you to benefit from a process know-how acquired through a world-wide customer base. In addition, we design and standardize solutions via our technical centers in Canada, China, Korea, Spain and Sweden. We share our press line automation know-how with our customers through specially designed selection guides, comprehensive equipment delivery documentation, and customized user training programs. We offer a total support from simultaneous engineering and simulation to process improvement during the production period. The local team is your guarantee that you get maximum availability in your press shop during the complete life of the automated system.

Technical Centers



Barcelona (SPAIN)

- During the early 1990's ABB Spain developed a standard for Press Automation with Robots. Today we have an installed base of 1800 robots in Press shops.



Shanghai (CHINA)

- Latest to be created, our Chinese group is growing at maximum speed in a favorable environment.



Toronto (CANADA)

- 1983 the doppins came into the NA-market (Ford, GM, Chrysler, BUDD). Our group in **Toronto** and **Detroit** takes care of operations in this important market.



Chonan (KOREA)

- Our group in Korea takes care of the Asian market excluding China. Their lean concepts provide reliability and cost-effectiveness to a well established market place.

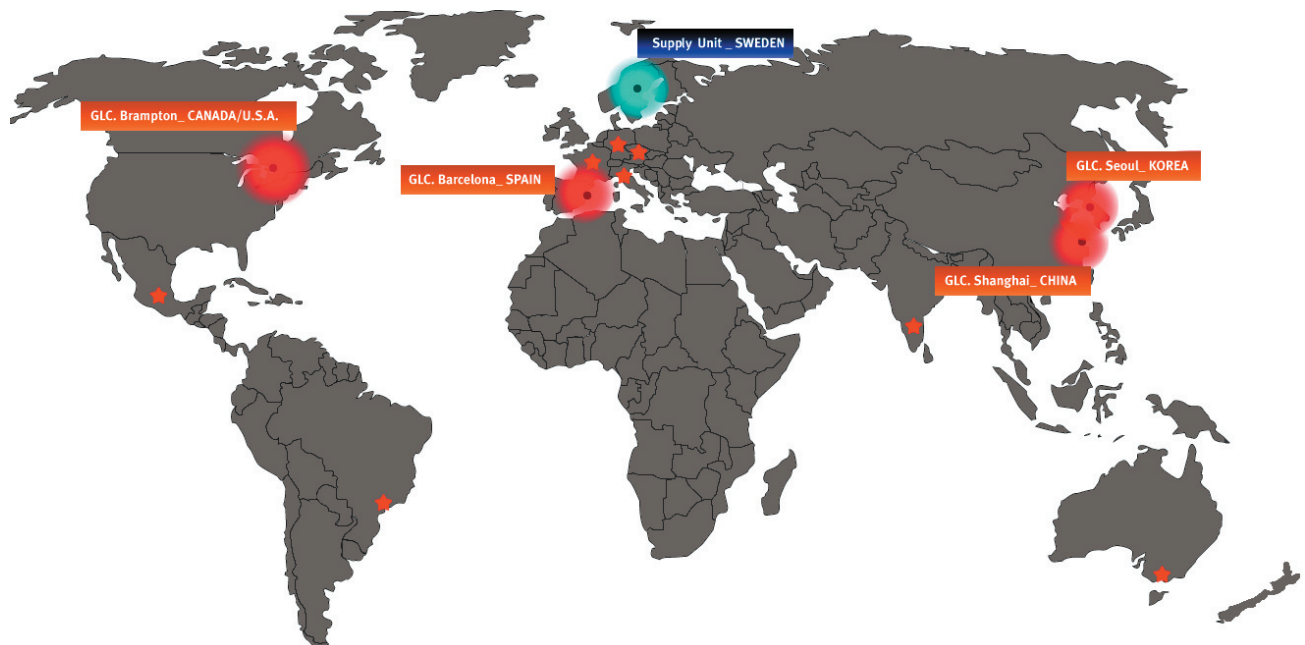


Västerås (SWEDEN)

- ABB developed in 1974 the first electrical robot in the world. Since then ABB has maintained a technical leadership in robot technology.

Press Automation Sales and Support Centers

- | | | | |
|---------------------------|-------------------------|---------------------|-----------------------|
| ★ Mexico DF (MEXIC) | ★ Sao Paulo (BRAZIL) | ★ Paris (FRANCE) | ★ Freidberg (GERMANY) |
| ★ Prague (CZECH REPUBLIC) | ★ Melbourne (AUSTRALIA) | ★ Bangalora (INDIA) | ★ Milan (ITALY) |



Over the last three decades, ABB has remained committed to building and strengthening relationships with customers, integrators and partners throughout the world.

Underpinning this commitment is our belief that at the heart of innovative robotics lie mutual trust and confidence.

This belief has helped us to achieve clear leadership in a demanding field. Today, in the automotive, metal fabrication, foundry, plastics and consumer industries, our wide range of products and solutions help to pave the way for optimised production. Across the world our global network of sales and service centres, and our carefully selected partners make ABB products, systems and services available wherever they are needed.



www.abb.com/robotics

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