

PACKAGING MACHINE WITH 6 AXES ROBOTIC ARM



Experimental capabilities

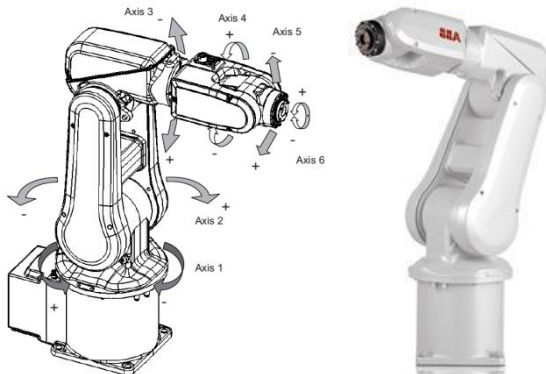
- **Production line management: format change following production sheets & process, mechanical adjustments, tooling changes following type of crate, lid, container, taken by 1 or 2 ...**
- **Configuration of the application according to the types of containers, crates with or without lid, the number of container per crate & their inside disposal, the quantity to produce crate, execution speed of the robot**
- **Preventive maintenance: setting, control of operating conditions, validation and testing.**
- **Corrective maintenance: diagnosis and sensor replacement, cylinder distributor, contactor, HS**
- **Technical and Functional analysis, industrial maintenance organization**

MLP550



Operating principle

Study and control of a robotic arm 6 axes of brand ABB for example in the automotive industry on manufacturing lines or for packaging type 'Pick & Place' of manufactured goods or packaging unit such as jars or bottles



The robust design of this device makes it suitable for use in schools.

The equipment is set up on an Anodized aluminium frame on casters wheels. This gives it great strength and a flexibility of integration into your premises.

The manufacture of this equipment complies with the European standard for machinery manufacturing.

This equipment can be used alone or with other compatible equipment from our range (see last section of this document).

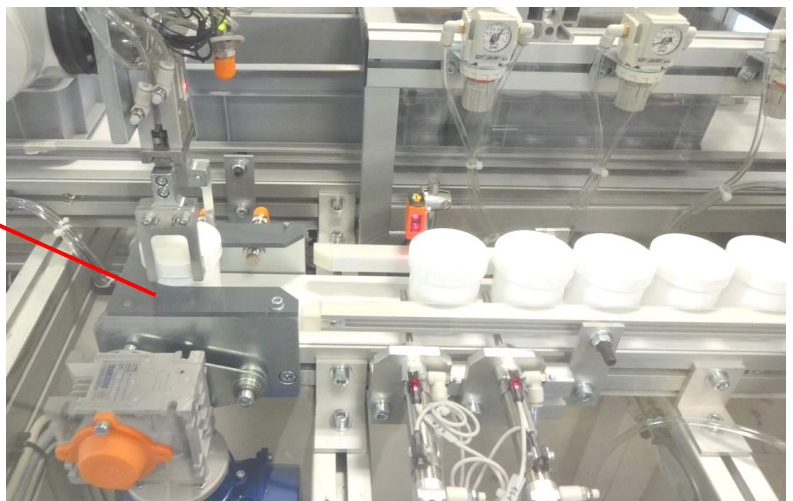
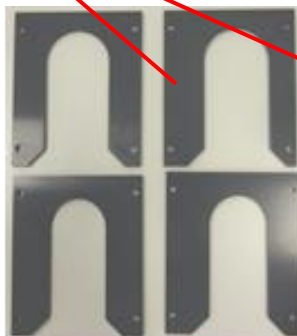
Technical details

➤ **This machine consisted of conveyors powered by variators (the production rate management). An additional variator enables the electrical supply of a feed table or an angle gear positioned upstream via a Type harting connector**

✓ **Transfert of products:**

- ✓ One ensures the supply of products to put in crate and can be operated manually or come from MLP205 bench, MLP335 or MLP345 placed upstream:
 - **conveyor of products** with carrier beam in aluminum / Ensures the supply of bottles and jars, equipped with adjustable side rail and centering plates of interchangeable containers. Providing the centering plates of different sizes for robot configuration activity: possibility given to the operator via the HMI to adjust the arm position for proper management of containers.
 - **optical sensors & capacitive** for detection of the products for the various positions (management of saturations)
 - regulating **cylinder** of flow of products (ginner system) equipped with **ILS detectors** and controlled by solenoid valve 5/2.

Set of centering plates of different dimensions for configuration activities



DIDATEC– Zone d'activité du parc – 42490 FRAISSES- FRANCE
Tél. +33(0)4.77.10.10.10 – Fax+33(0)4.77.61.56.49 – www.didatec-technologie.com
email : service_commercial@didatec-technologie.com

Reproduction interdite / copy prohibited– Copyright DIDATEC avr.-16- page 2

Dans le cadre de l'amélioration permanente de nos produits, ce descriptif technique est susceptible d'être modifié sans préavis
As part of the continuous improvement of our products, this technical specification may be modified without previous notifying

Illustrations non contractuelles / Illustrations not contractual

version : FT-MLP550-STD-C

MLP550



✓ Transfer of plastic bins:

The 2nd ensures the circulation of the bins provided in two dimensions that can then be queued above in production output or evacuated towards the palletizer MLP700 placed downstream:

- **Belt conveyor** equipped with adjustable guide rails depending on the formats of bins
- **Optical detectors** of presence of the bins at different stages (management of saturations).
- **Cylinders** of regulating the movement of bins, controlled by electro distributors 5/2 (& abutting & flanging of crate)
- **Pressure switches and ILS** sensors for detecting cylinder positions
- Pressure regulator with manometer for pressure control exerted on the crates during their maintenance



➤ Chargers with lid:

Interchangeable removable storerooms localized (with capacitive presence detection) for 2 cover sizes are provided (Multiplication of format change activities)



➤ Gripper, robot arm multi-tool:

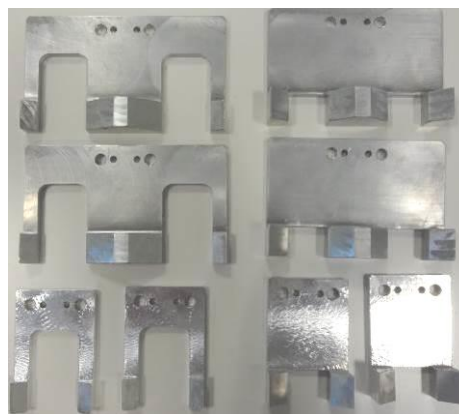
The establishment of the products into the bins and lids is performed by a robotic arm 6 axes (ABB brand) equipped with two types of gripping:

- with suction cup for taking of the lids in distribution chargers (2 size lids provided)

MLP550



- via a clamp with interchangeable jaws according to the type and number of products to be taken: multiplication of change activities of crating recipe
- Cylinder parallel clamp oversized to support the educational use. 4 pairs of easily interchangeable clamps (locating pin, and setting up the robot via the HMI in the position dedicated to tooling change), for gripping by one or two of bottle or jar



- Use of pressure switch, vacuum switch, PNP sensors, and programmable optical sensor for embedded control actuators at arm's length. Backup file
- Programming via a console (FlexPendant) equipped with a joystick (initial reference point, trajectory, etc ...)
- The operator can select the following parameters directly via the HMI of the machine without using the FlexPendant of the arm:
 - ✓ Number of crates
 - ✓ The placement of containers in the small or large crate
 - ✓ The robot's manual control (setting initial position or position tooling change)
 - ✓ The manual control of the arm length actuators (suction clamp & cover of gripping)
 - ✓ The average speed, fast & possibility to shift the taking of the bottles
- The tooling mounted at the end makes it possible to achieve an execution radius of 700mm. The different robot work stations were positioned to allow you to highlight the magnitude of possible use as well as the execution speed of the robot

➤ 3D simulation software tool PHL ROBOT STUDIO

This offline programming software and robotic cell simulation runs in the Windows environment on PC and includes a set of functions and software modules that meet the following demands

MLP550



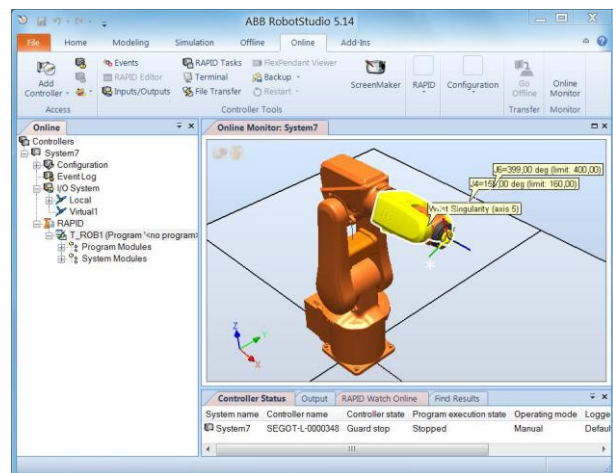
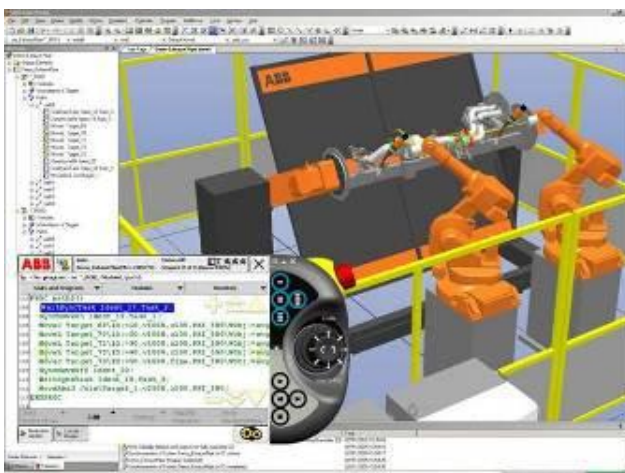
- Study of robotic cell implantation,
- Generation of trajectories according to geometric data in 3D to SAT format
- Edition of robot programs and system settings
- Test and development of robot programs,
- Cycle time estimation, analysis and optimization of existing trajectories,
- Training of operating personnel and of programming.

Its functions 'on line' adds the connection by Ethernet to the real robot cabinets for transfers of trajectories (of the robot towards the RobotStudio software and vice versa), the editing of the programs and system settings. This software is provided with a network license for 100 simultaneous users.

The main added value of this product is its operation "off-line" on the PC, which allows the realization of these tasks without tying up your tool of "production" through technology "Virtual Robot", unique to ABB. You have the ability to carry out practical work in the room:

- Risk reduction by visualizing and confirming the technical solutions before the industrial establishment,
- Introduction of new parts or modification of existing parts without stopping production,
- Optimizing of robot programs to increase the productivity without stopping production.
- Obtaining a better quality of parts through the creation of more accurate trajectories
- Reproduce closely the operation of the real robot on a PC.

The programs and system settings can be exchanged directly between the real robots and the PC, and vice versa, to be edited and tested offline.



"Virtual Robot™" - the virtual robot - is a proper technology to ABB, which faithfully reproduces the operation of the real robot on a PC.

Programs and system parameters can be exchanged directly between the real robots and PC, and vice versa, to be edited and tested offline.

To operate RobotStudio 5 and its options, the minimum and recommended configurations of the PC are:

DIDATEC– Zone d'activité du parc – 42490 FRAISSES- FRANCE
Tél. +33(0)4.77.10.10.10 – Fax+33(0)4.77.61.56.49 – www.didatec-technologie.com
email : service_commercial@didatec-technologie.com

Reproduction interdite / copy prohibited– Copyright DIDATEC avr.-16- page 5

Dans le cadre de l'amélioration permanente de nos produits, ce descriptif technique est susceptible d'être modifié sans préavis
As part of the continuous improvement of our products, this technical specification may be modified without previous notifying

Illustrations non contractuelles / Illustrations not contractual

version : FT-MLP550-STD-C

MLP550



	Configuration minimale	Configuration recommandée
Processeur	2 GHz	3 GHz ou plus rapide
Mémoire RAM	1 Go	3 Go
Système d'exploitation	Microsoft Windows XP « Edition Professionnelle ». (avec « Service Pack » 2 ou ultérieur) ou Windows Vista	Microsoft Windows XP « Edition Professionnelle ». (avec « Service Pack » 2 ou ultérieur) ou Windows Vista
Disque dur	5 Go disponible	5 Go disponibles
Carte graphique accélératrice 3D	OpenGL, 1280 x 1024 266MHz – 128 Mo RAM graphique	OpenGL, 1600 x 1200 400MHz – 256 Mo RAM graphique
Souris	Compatible Microsoft à 3 boutons	Compatible Microsoft à 3 boutons
Lecteur de DVD-ROM	Pour l'installation uniquement	Pour l'installation uniquement
Carte réseau	Interface Ethernet et TCP/IP	Interface Ethernet et TCP/IP

Note : la configuration « minimale » est suffisante pour réaliser des études d'accessibilité ne mettant pas en œuvre de modèles CAO. La configuration « recommandée » est nécessaire pour la programmation hors-ligne d'après des données CAO. L'équipement informatique (PC) n'est pas prévu dans cette offre

➤ Chassis :

- Structure in aluminum profile reinforced in order to support the arm accelerations is fixed on a massive steel plate. System equipped with directional castors with brake for transportation and of large adjustable feet anti-vibration in height for perfect stability and allow alignment with our other range modules even in case of significant flatness defect of the ground. Ensemble fully enclosed via polycarbonate & pvc of 8mm.
- 4 wide doors equipped with magnetic safety switches. Opening via access request button (management of secure cycle)

➤ Electrical box:

- Circuit breakers and differential
- Preventa module coupled with the emergency stop
- Main switch
- 24Volt power supply
- CPU type M340 with Ethernet Module
- Control cabinet IRC5 compact
- 3 ATV-type inverters for control of conveyors,

➤ Console:

- Remote and height adjustable (**Use use people with reduced mobility**)
- Buttons, indicators and control switches
- Color touch screen ensures :
 - o human-machine dialogue/ and allows the parameterization of machine operation (type / number of container and carton etc ...)
 - o selecting actuators for their individual manual control
 - o visualization of sensor conditions (PLC Inputs / Outputs)

DIDATEC– Zone d'activité du parc – 42490 FRAISSES- FRANCE
Tél. +33(0)4.77.10.10.10 – Fax+33(0)4.77.61.56.49 – www.didatec-technologie.com
email : service_commercial@didatec-technologie.com

Reproduction interdite / copy prohibited– Copyright DIDATEC avr.-16- page 6

Dans le cadre de l'amélioration permanente de nos produits, ce descriptif technique est susceptible d'être modifié sans préavis
As part of the continuous improvement of our products, this technical specification may be modified without previous notifying

Specific material for pedagogical activities:

- **Corrective maintenance kit** (defective equipment) consists of:
 - 1 distributor HS
 - - 1 contactor HS
 - - 1 sensor HS
 - - 1 cylinder HS
 - 1 set of two centering plates with alignment defect
- **Format change kit (all equipment provided)** composed of:
 - Various specific **tools** to each product type (guide plate, lid charger, flanging shim)
 - **Adjustable supports** integrated into the system (spacing of edges, space between ginner)
 - **2 sets of containers** of 2 different forms for format change activities (bottles and jars)
 - **2 sets of stacking containers of European-type with lid of different dimensions and very resistant** (300x200x120mm & 200x150x120mm)

Services required

- Electrical supply : 400 Vac – 50 Hz – 20 A
- Compressed air supply: 6-8 bars (dry air)
- Dimensions: (LxWxH mm): 3100 x 1000 x 2000
- weight (Kg): 350

Note : if the equipment installation is operated by our staff, all supplies and exhaust connections required must stand at less than 2m from the machine

Documentation

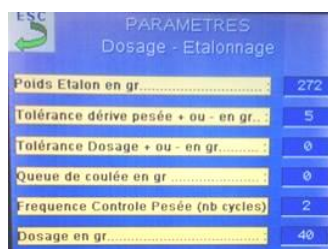
- User's manual
- Pedagogical manual
- Technical documentation of the components
- Lab exercises
- Configuration files (PLC, controller)
- Software :
- Certificate of conformity CE

Options

Compatible equipments in the range can be offered as an option.

For example, for compliance controls product, we prefer to offer:

- **the independent module of dosage by weight control MLP325**

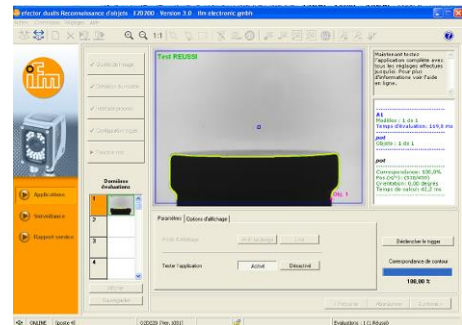
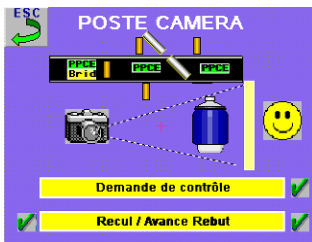


PARAMETRES Dosage - Etalonnage	
Poids Etalon en gr.....	272
Tolérance dérive pesée + ou - en gr.:	5
Tolérance Dosage + ou - en gr.....	0
Queue de coulée en gr.....	0
Frequence Controle Pesée (nb cycles)	2
Dosage en gr.....	40



- **or the independent control module by camera MLP345**

MLP550

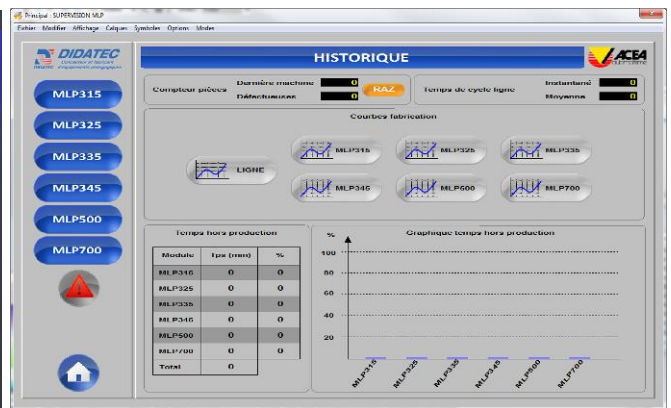
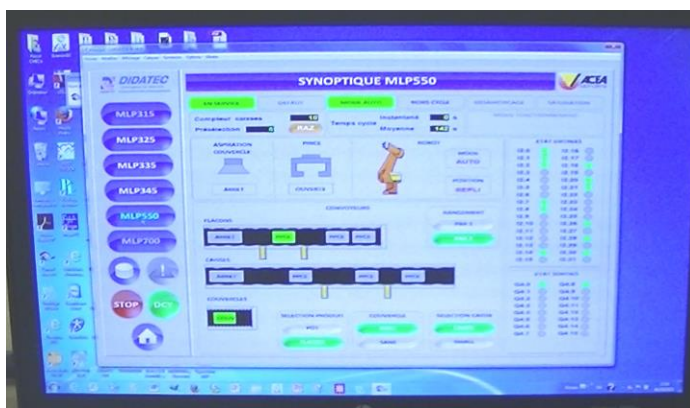


These benches are part of our modular production line. They are to be placed upstream of our robotic arm or **can operate independently** in order to **multiply workstations and offer more opportunity to study** instead of proposing integrated systems which then monopolize the robotic arm.

These modules while requiring no modification of MLP550 bench in the case of a subsequent acquisition.

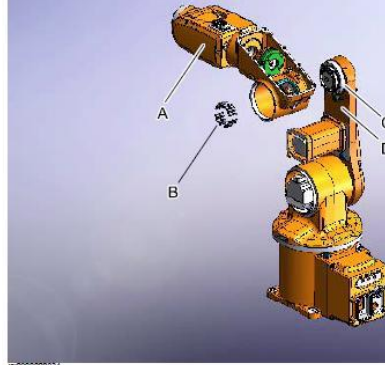
Illustration Supervision MLP 800

Supervision can control via a PC our modular production line modules independently or as the robotic arm (see technical data sheet MLP800)



- **MLP551 : Subset type top arm with complete handle**
- With its simplified and compact technical architecture, in the industrial context, this robot allows you to realize a standard exchange complete subset in a limited time.
- ABB provides documentation on mechanical maintenance of the robot accompanied by descriptions of the preventive maintenance procedures, intervals and expected life of the parts as well as the disassembly procedures.

MLP550



A	Bras supérieur, complet avec poignet
B	Vis de fixation (18 pos)
C	Réducteur, axe 3
D	Bras inférieur

Specific training in programming of ABB robotic arm

- Specific training to the use and programming of the robotic arm, provided by our integrator partner who is furthermore an approved training organization. Level according to learners.
- Internship offered in your establishment or our premises, your MLP550 bench serving as an ideal study support.
- Package based on the number of trainees and of duration (1-5 days).
- Price : Contact us

Recommended equipment

- Upstream: Dynamic power table
- Upstream: Angle gear conveyor
- Upstream: Jars or bottles capping machine
- Upstream: Control conformity machine by camera
- Downstream: Industrial palletizer 3 axis
- Supervision in Ethernet network
- MLP 205
- MLP 206
- MLP 335
- MLP 345
- MLP 700
- **MLP 800**