



Developing PCB manufacturing  
automation solutions since 1990



SOLUTIONS CATALOGUE

AUTOMATION SYSTEM FOR PCB

[techno-system.es](http://techno-system.es)

# Automation System for PCB Manufacturing

With more than 30 years of experience in PCB automation and integration with external processes, we offer our customers complete solutions that provide maximum flexibility, productivity and economic efficiency. Our services include:

Service & Co-design

Project Management

Full Integration Projects

Customized Integration Software





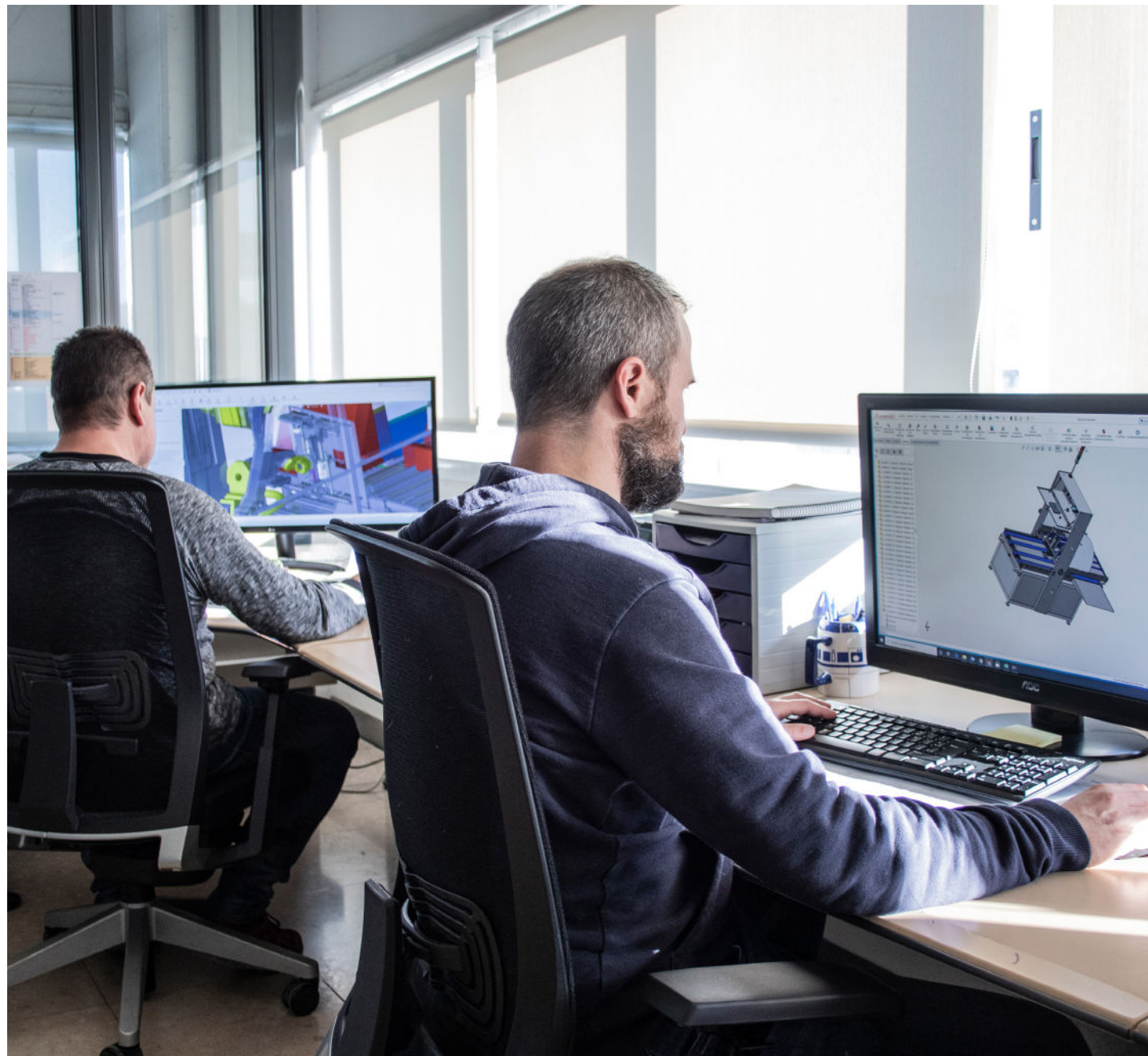


# Service & Co-Design

Always looking for production time optimization, we adapt our designs to the needs of our customers, their available space, software and hardware.

All production lines are different and have completely different needs and our goal is to deliver solutions that adapt 100% to your factory's requirements.

We design both for **standard production lines** and for **advanced forms of integration**, with robotic arms and software that seamlessly connects to peripheral systems.



# Project Management

We conduct plant concept and design, mechanical, electrical & electronic development, as well as the integration of software.

**Installation & Set Up:** Our team is ready to travel to your production plant and insure full integration of our solutions.

**After Sales Service & Updates:** We offer our Technical Assistance Service, adjusting to the constantly required changes and updates.





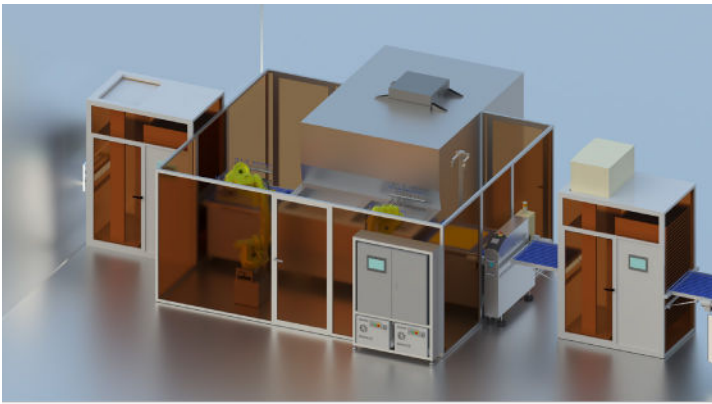
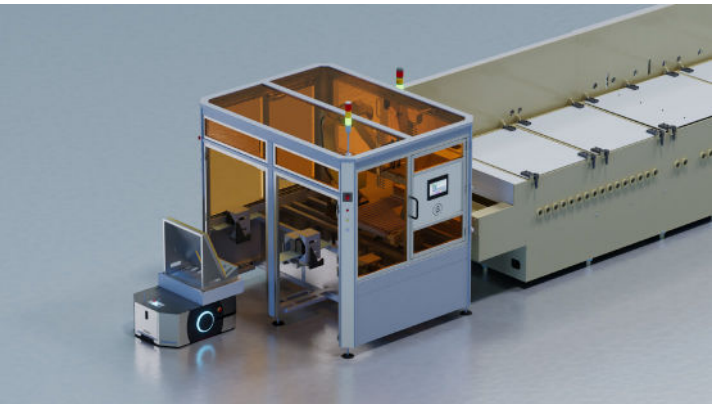
# Full Integration Projects

We handle tailor made automation, with machinery and projects designed to integrate perfectly into any environment and ecosystem.

We adapt to your needs, space requirements, process speed, hardware and software.

Optimizing the throughput time in the circuit board production is one of our main goals.

We are ready to work together with machinery from other companies, customising our services to achieve full integration with them.



# Customized Integration Software

We specialize in the development of various automation solutions utilizing software protocols for seamless integration with a wide range of machinery, including Direct Image (DI or LDI), Legend printers, Digital Solder Mask Printers, AOI systems, SES, and DES lines, among others.

Capture the bar code or data matrix of the panel located in the header and transfer the recipe to all the peripherals.

Integrate conveyor belts, angle deviations and unloaders and transfer all the parameters to the lines that are being fed.

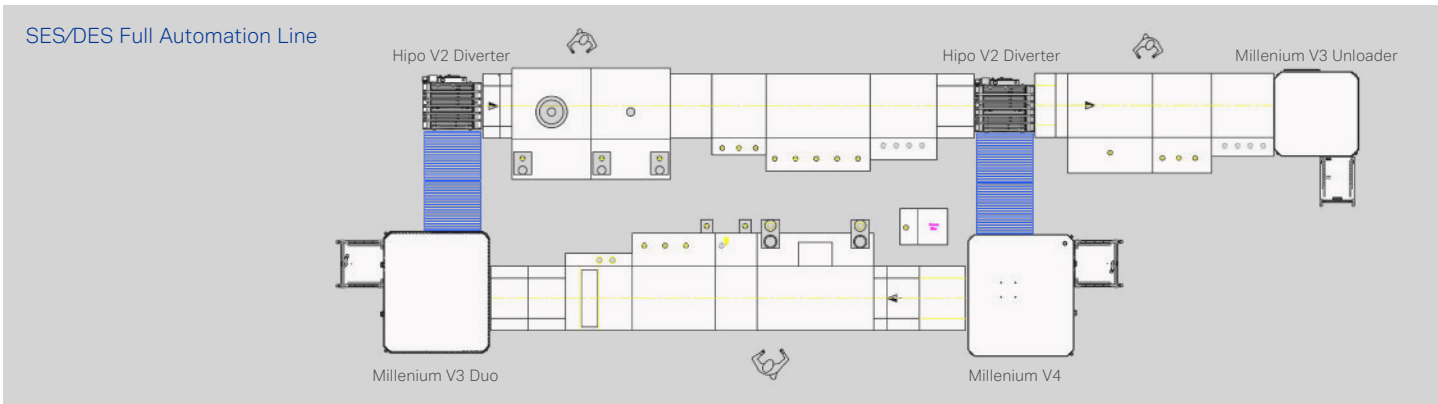
Fully Integrate with AOI, DI, LDI or Legend Printer using a High-end Panel PCs.

Remotely access all automation functions.

Manage the Job Queue Controller with automatic data matrix or bar code lectors.

Use Ethernet Communication with other automation units or external devices.

Use Web Service with ERP and MES systems.



# Our Innovative Product Range

As every factory is unique, we develop our machines to be different and to fit in perfectly, ensuring maximum performance. Explore our series and discover the particularities of each solution.

Our series:

**Entry Level Automation**

**High-end Automation**

**Automation for DI & LDI**

Entry Level Automation



High-end Automation



Automation for DI & LDI



## ENTRY LEVEL AUTOMATION SERIES

We have a rich history spanning over 30 years in the field of PCB automation. Our journey began with the inception of straightforward PCB pile Loaders and Unloaders.

As we progressed, we reached a pivotal moment in the mid-90s when Techno System introduced the industry the Jirafo Loader & Unloader, a name that resonated throughout the PCB market and found a home in numerous PCB shops over the course of decades.

Today, our Automation entry-level solutions encompass a wide range of capabilities, effectively addressing the diverse demands of PCB handling. These solutions not only meet the industry's stringent requirements but are also economically compelling, making them a highly attractive option for mid-sized PCB shops.

Our commitment to innovation, coupled with our extensive experience, positions Techno System as a reliable partner for all your PCB automation needs. We continue to evolve, ensuring that we remain at the forefront of the industry, delivering cutting-edge solutions tailored to your specific requirements.



# JIRAFO Loader & Unloader

JIRAFO is the perfect system to load or unload any horizontal line where the panels need to be stored in semi-vertical position and is the ideal solution for small and medium sized PCB shops.

The combination of the JIRAFO tilted conveyor with the trolleys at the same height makes it an excellent solution to transport PCBs on trolleys with no the need for manual handling.

Unique adjustable conveyor system to set different heights. All the trolleys are the same and are always at the needed height.

It can be delivered as a Loading device, Unloading device or Buffer (Loader + Unloader).

The JIRAFO Loader Heavy Duty can load heavy drilled panels as it's equipped with extra vacuum power.



# ERIZO 30/60/100 Loader & Unloader

The ERIZO is a universal Loader / Unloader that can be used as a Loader in front of any horizontal line or as an Unloader at the end of the line.

ERIZO 60 have a capacity of 60 panels and ERIZO 100 of 100 panels.

They can be equipped with 1 or 2 conveyors.

Designed for any kind of horizontal line where panels can be inner or outer layers.

Equipped with a touch screen with a friendly interface together with a PLC offering connectivity.

All the Erizo 60 & 100 can be equipped with Metallic Rods for Inner Layer handling.



# PATO Loader & Unloader

PATOs can load or unload all kind of horizontal lines where contact is permitted and panels are stored in a horizontal position.

## LOADER

By means of rows of adjustable suction cups where the gripper picks up a panel from the stack and displaces it over to the conveyor minimizing the friction between panels.

Can be used for individual PCBs in final cleaning lines and different panel sizes.

Pile capacity up to 300 mm stack.

## UNLOADER

Automatically adapts to different panel thicknesses without the need of manual adjustment.

PCBs go through a pair of rubber rollers raising the leading edge of the panel to a positive angle to minimize scratches.

Speed can be adjusted from 0,5m/min up to 10 m/min.

It can accumulate a stack of 500 mm of panel height.



Pato Loader

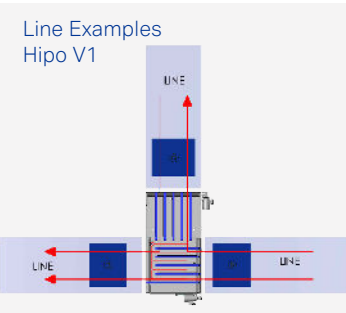


Pato Unloader

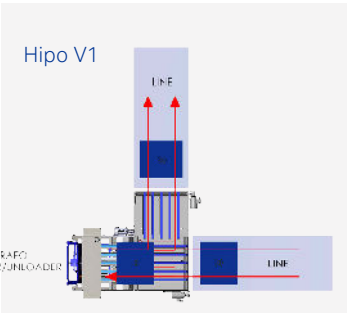
# HIPO V1/ V2 Diverter

The HIPO Diverter was designed to divert PCB panels in all directions.

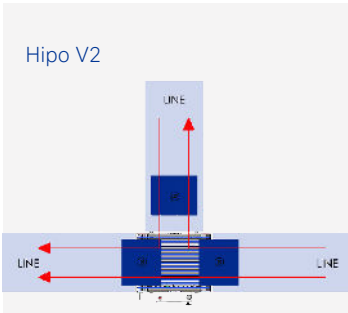
- Divert panels keeping the Leading Edge direction without any rotation.
- Can be installed in the middle of a horizontal line or at the end.
- It can operate individually or it can be driven by the machine it is linked to.
- Running speed from 0.5m/min up to 5m/min, maximum number of 4 panels per minute.
- Equipped with two sets of flat belt conveyors to minimize the friction.
- Integrates a PLC and a touch screen with an easy operator interface and can be custom programmed to meet special customer requirements.



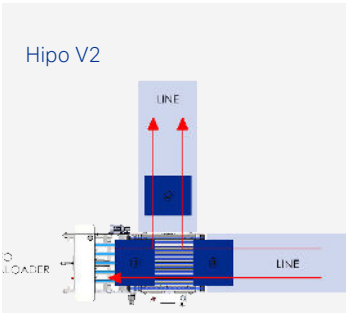
Line Examples Hipo V1



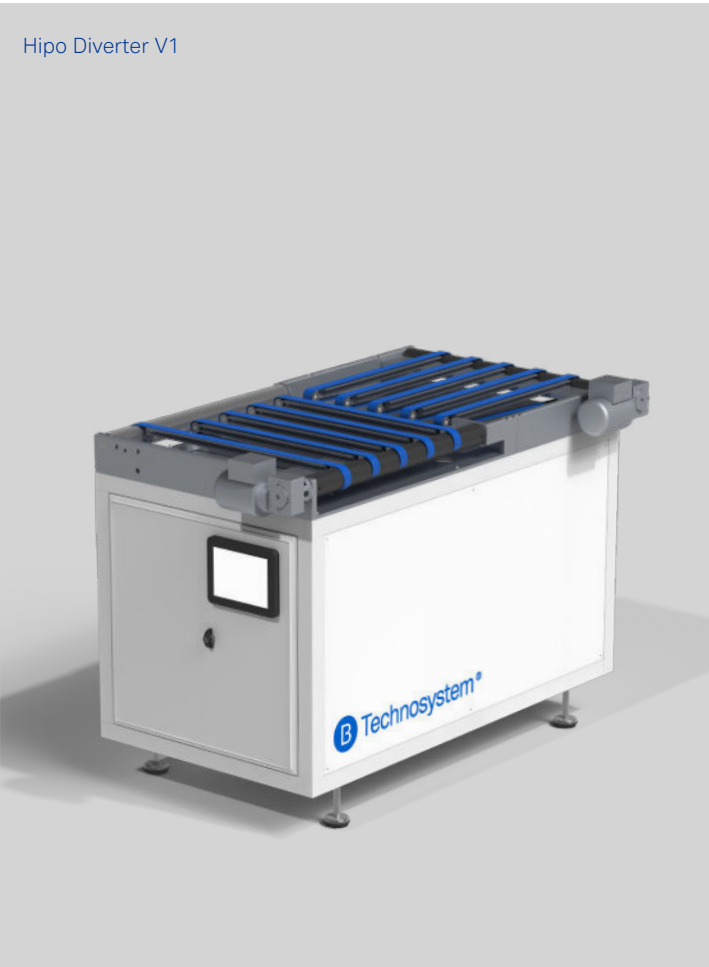
Hipo V1



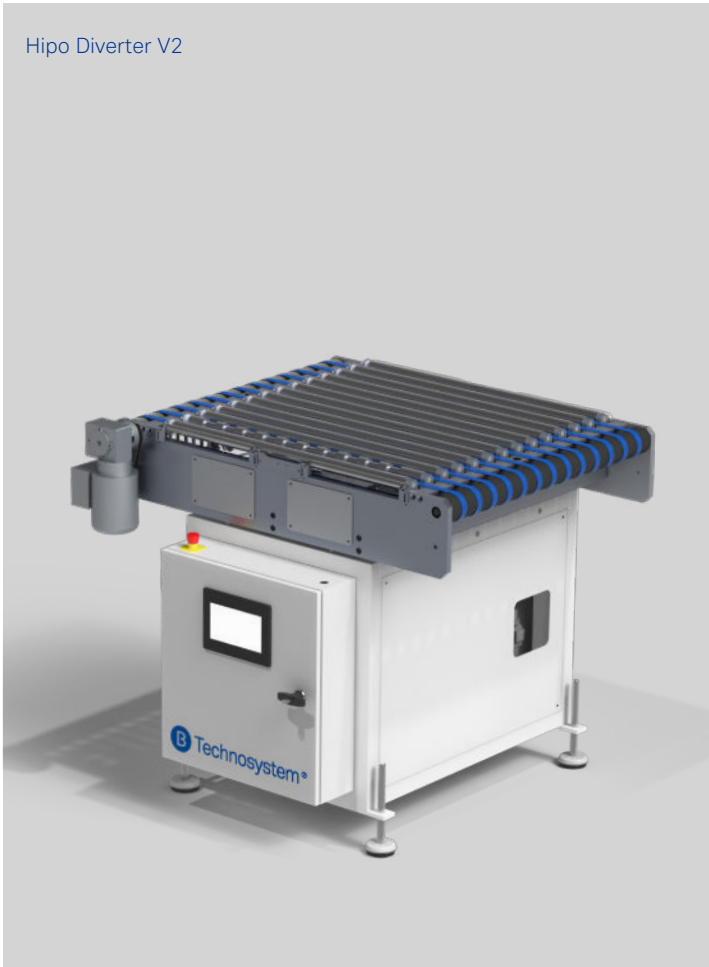
Hipo V2



Hipo V2



Hipo Diverter V1



Hipo Diverter V2





Our Millenium V4 Unloader with SES Line

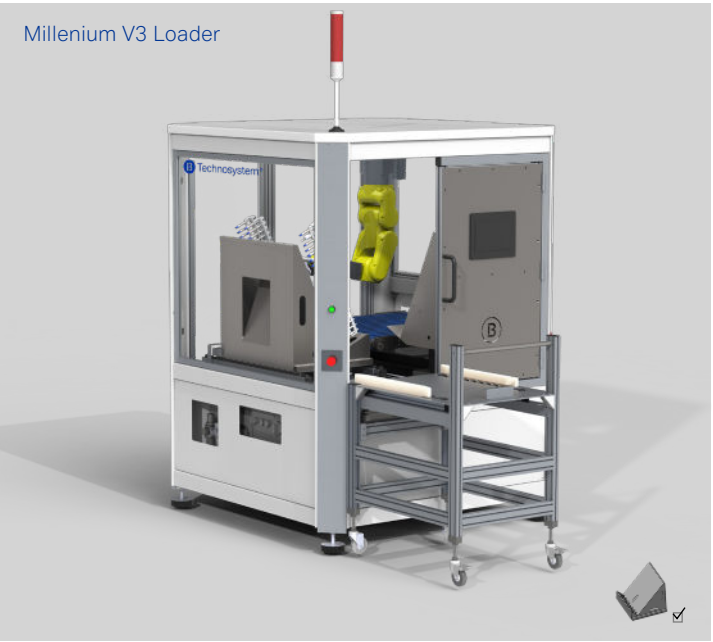
# MILLENNIUM SERIES

In the year 2000, Techno System introduced a line of high-end automation solutions to meet the growing demands of PCB factories. These facilities required a range of new features that the existing Techno System Entry Level Automation couldn't adequately provide.

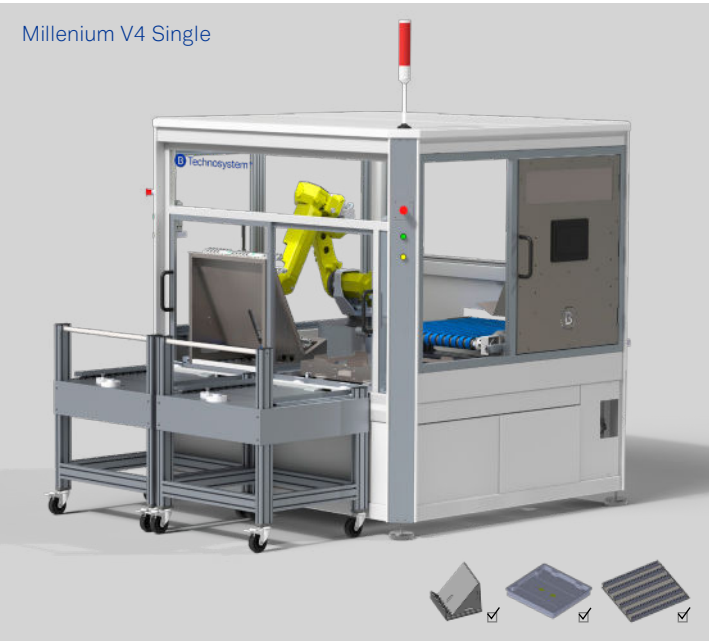
All models in the Millennium Series are equipped with renowned 6-axis robots known for their precision and speed. They excel at tasks such as contactless alignment, centering, rotation, or decentering. Moreover, these robots seamlessly integrate with other production lines and fully comply with Industry 4.0 standards.

The Millennium Series offers a diverse range of automation solutions. It includes compact systems like the Millennium V1, which is perfect for high-end PCB manufacturers with diverse production requirements, and extends to the robust Millennium V3 TRIO. The latter is capable of handling panels weighing up to 6 kilograms, achieving a rate of 6 panels per minute ( including plastic interleave) , and even features QR code readers for job identification and traceability, as well as hot swapping of 5 horizontal boxes and 2 L-racks to optimize production output.

In addition to these capabilities, the Millennium Series provides a wealth of optional features, including automatic panel size measurement, suction cup gripper automatic adjustment, online measurement, CCD-based on-the-fly panel alignment, copper thickness control, and laser engraving for data or QR code marking.



Millenium V3 Loader



Millenium V4 Single



Millenium V4 Dual



Millenium V4 Trio



## Millenium V3 Loader / Unloader

The Millennium V3 Loader/Unloader is specifically designed for mid-size PCB factories with a high mix and a substantial layer count, where delicate handling is paramount.

This automation system can be installed in factories with limited floor space, thanks to its compact footprint of 1.4m x 1.4m.

Notably, the system features a sleep sheet insertion function that can be easily activated or deactivated by the operator. Furthermore, all Millennium Unloaders come equipped with a CCD camera to align panels without the need for mechanical alignment, thus preventing scratches on the bottom side of the PCB.

Customizable options such as a double sheet panel detector and automatic suction cup gripper adjustments can be integrated to suit the specific needs of customers.

Additionally, the Millennium V3 Unloader is equipped with a Buffer station that activates each time the L-rack is removed from the automation. This prevents production line stoppages, making it an ideal feature for high-mix PCB factories.



## Millenium V4 SINGLE Loader/Unloader

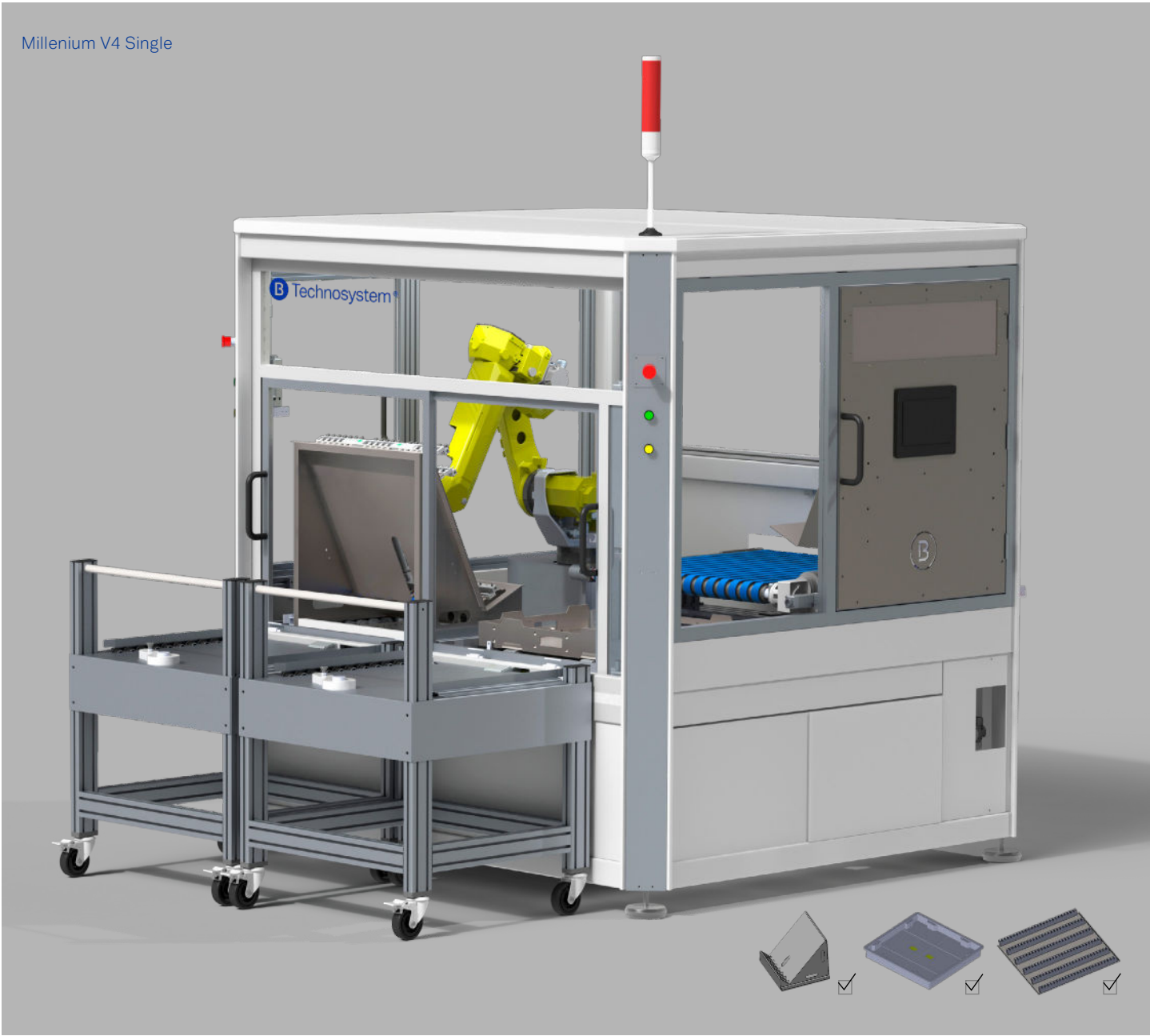
An advancement in automation technology, the V4 has been developed for PCB factories with heavier production loads, capable of handling panels weighing up to 6 kg with great speed and security.

The system features a station for sleep sheet insertion or removal and offers the flexibility to add a second L-rack station or a horizontal box, making it adaptable to various requirements. For specialized applications like dry film developing lines, the Millennium V4 Single can be equipped with slotted racks.

Once again, the range of options that can be integrated into this automation is extensive. These options include

panel measuring, on-the-fly double sheet detection, copper measurement, overall core measurement, barcode or QR code reading, and laser engraving for job identification.

All Millennium V4 Unloaders come equipped with automatic panel measurement and on-the-fly CCD camera alignment to reduce the risk of copper scratching on the bottom side of the panels.





## Millenium V4 DUAL Loader/Unloader

The Millennium V3 Loader/Unloader is specifically designed for mid-size PCB factories with a high mix and a substantial layer count, where delicate handling is paramount.

The Millennium V4 DUAL is the result of combining the features of the Millennium V4 SINGLE, while introducing the highly sought-after HOT SWAP function.

This innovation was specifically developed to cater to PCB factories engaged in massive production. The HOT SWAP function empowers operators to seamlessly exchange L racks or horizontal boxes without interrupting the automation process. This feature ensures operator comfort and security, with a set of safety barriers within the automation to prevent entry into the robot's moving area.

Once again, a wide array of options is available for the Millennium V4 DUAL. These options encompass a copper thickness detector, automatic suction cup grippers, mechanical grippers for heavy panels, and on-the-fly double sheet detectors, particularly useful for thin core loading.

Every Millennium V4 DUAL Unloader is equipped with automatic panel measurement and on-the-fly CCD camera alignment to minimize the risk of copper scratching on the bottom side of the panels.



## Millenium V4 TRIO

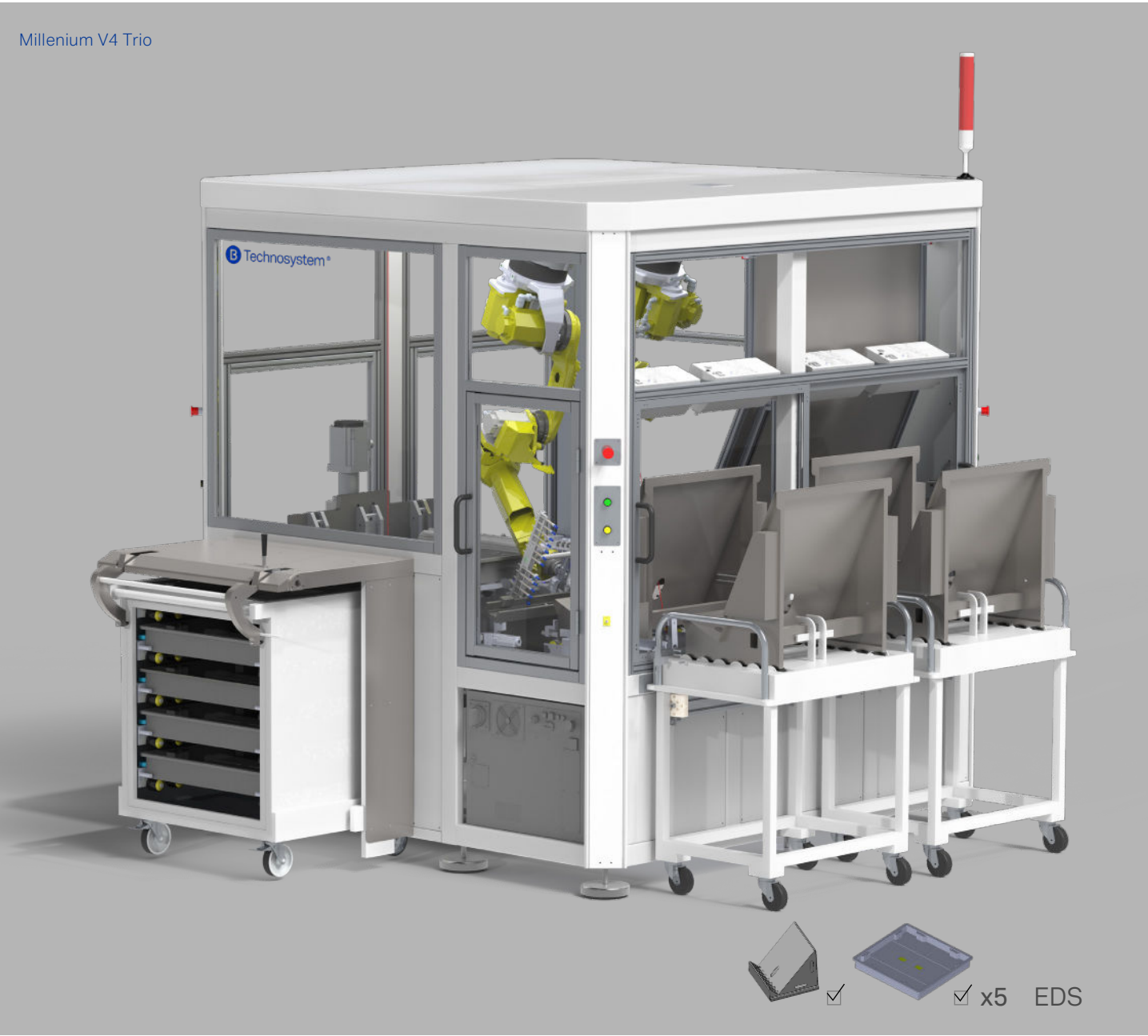
Building upon the V4 DUO's foundation, the Millennium V4 TRIO incorporates two remarkable features demanded by high-end customers: enhanced production speed and uninterrupted operation.

This automation system includes a trolley with five horizontal boxes and two L Rack stations equipped with hot swap functionality. With all these features, the Millennium V4 TRIO can operate at a remarkable rate of 6 panels per minute, encompassing sleep sheet insertion or removal. This impressive speed is made possible through the simultaneous operation of two high-speed robotic arms.

The Millennium V4 TRIO offers a multitude of options, including automatic box exchange, panel measurement

for height identification during the loading operation, complete EDS Automation, automatic suction cup gripper adjustment, copper thickness control, overall core thickness measurement, or on-the-fly double sheet detection, among others.

Each Millennium V4 TRIO Unloader is equipped with automatic panel measurement and on-the-fly CCD camera alignment to minimize the risk of copper scratching on the bottom side of the panels.



# V-LDI Series

Product range designed to serve medium and prototype PCB shops with a big mix of jobs, optimizing automation systems for all types of direct imaging, AOI or Legend Printing processes.

The V-LDI Loader/Unloader Series has been designed to drastically reduce human intervention in the loading and unloading stand alone machinery.

## V1- LDI Loader/ Unloader

The V1-LDI Loader/Unloader is a standalone peripheral automation system designed to complement PCB machines that typically require operator presence for continuous operation. The operator must be fully engaged to ensure efficient production from the machine.

The V1-LDI eliminates the need for human intervention by seamlessly handling the loading, cleaning, flipping, and unloading of panels.

This automation system includes a one six axis robot, a double suction cup gripper for fast panel exchange an entry L-rack, a buffer station, a roller cleaner, and a flipping device to operate automatically. The V1-LDI is compatible with a wide range of LDI or DI machines, including Paragon, Nuvogo, Express, Schmoll MDI, Miva, and others.

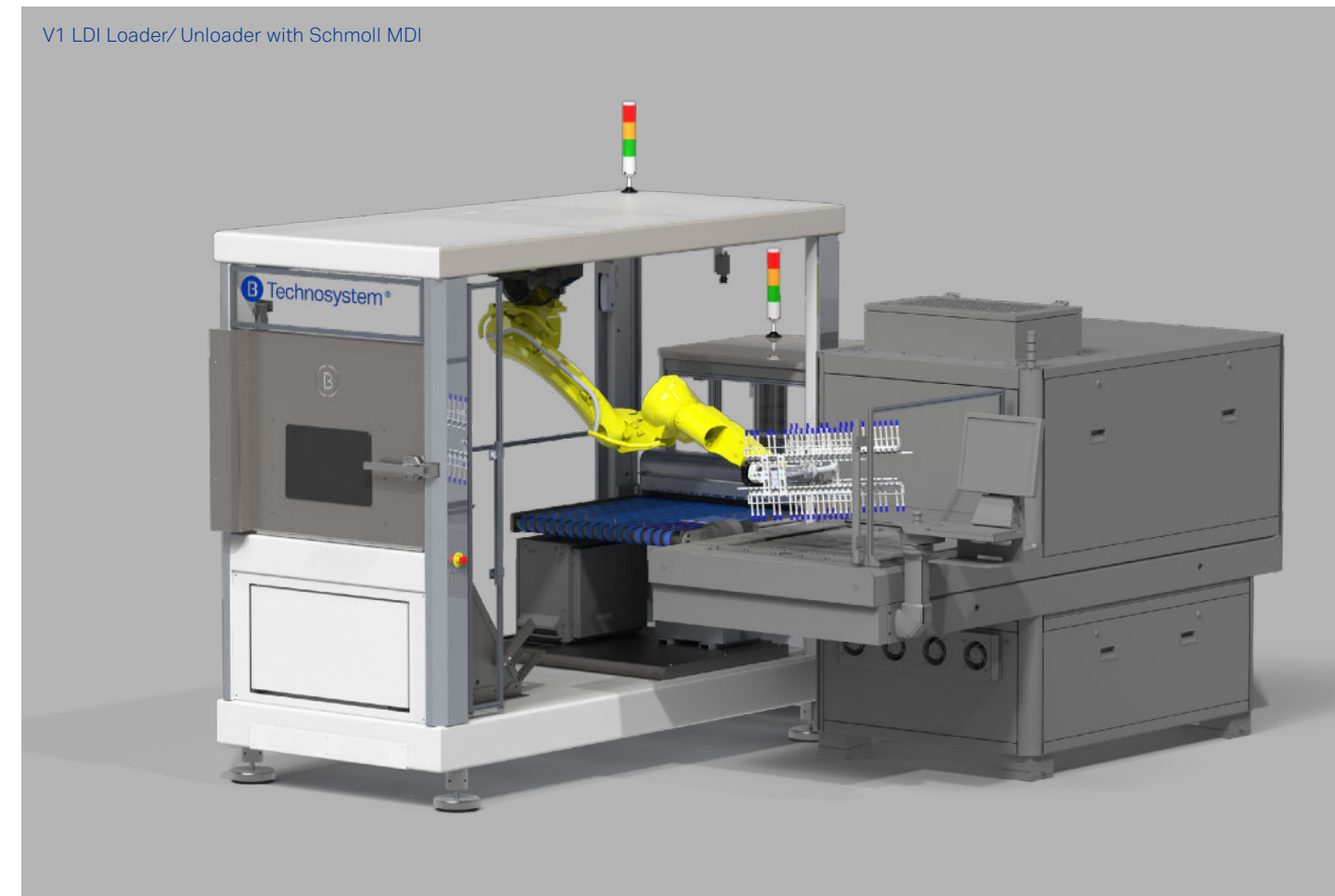
Thanks to its compact footprint, the V1-LDI can be easily installed beside the DI machine, requiring only 1.2 meters of space on the right-hand side for loading. The sequence time

per side is under 19 seconds, making it particularly appealing for mid-production LDI or DI applications.

Across the V-LDI series, support for multiple job lists is a given, ensuring that the number of panels per job does not impede production throughput. Job exchanges are seamlessly managed through communication protocols with the connected peripheral machines, simplifying the workflow for operators.



V3 LDI with CIMS Galaxy



V1 LDI Loader/ Unloader with Schmoll MDI



## V2-LDI Loader/Unloader

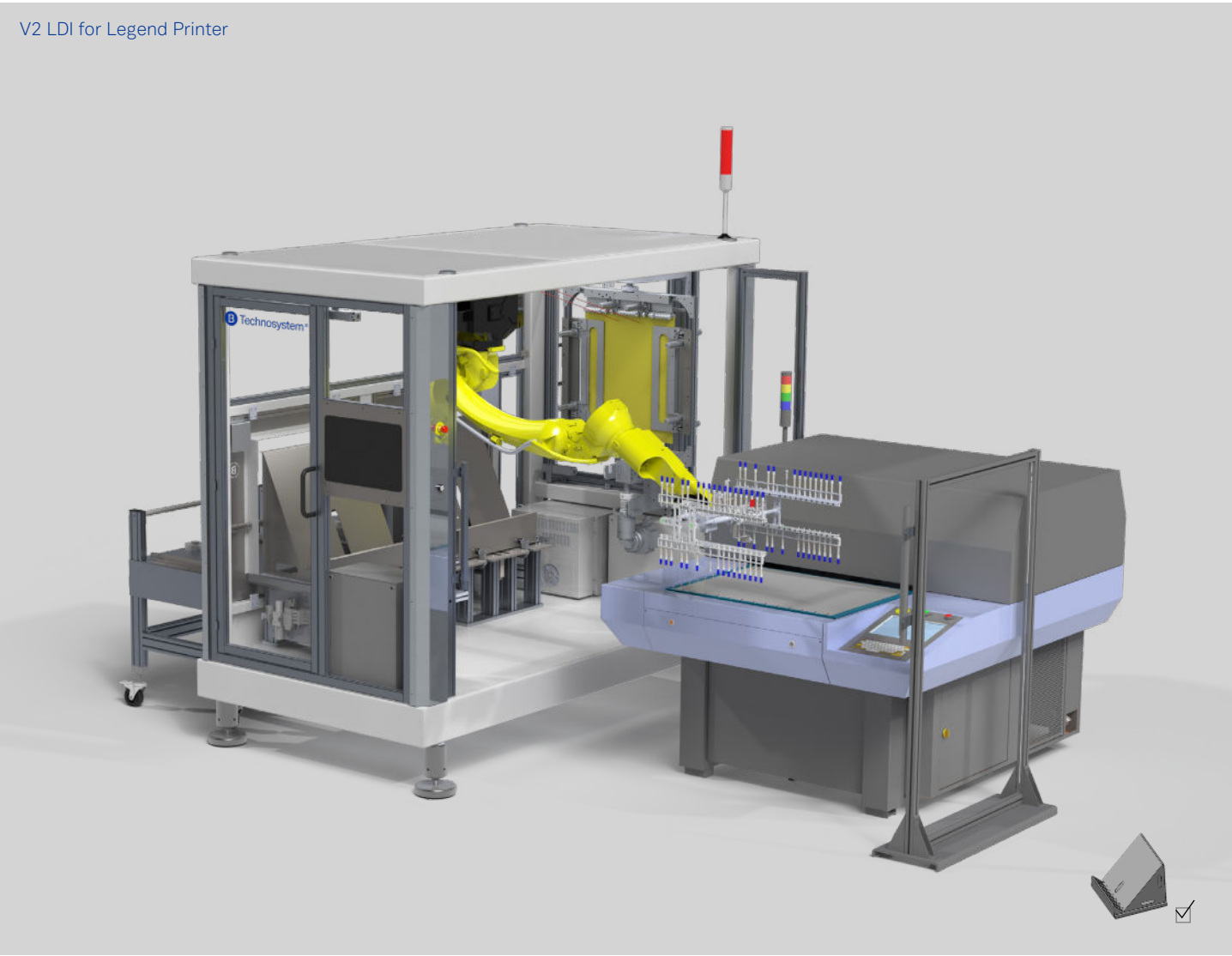
The V2-LDI Loader/Unloader is a cutting-edge peripheral automation system specifically designed to cater to Legend Printers and DI machines used exclusively for solder mask production, where panels are in contact with a plastic sleep sheet.

This system features two L-rack stations: one for panel entry before exposure and the other as a buffer station. What sets this automation apart is the innovative Techno System vertical flipping mechanism, which enhances its compactness and versatility.

Notably, the V2-LDI can be seamlessly integrated with any Legend Printer available in the market. By utilizing the Techno System front end, operators can efficiently queue and manage print jobs in a matter of seconds.

The system is equipped with a six-axis robotic arm complete with a double suction cup gripper adjustable in size, facilitating rapid panel exchange and ensuring a cycle time of under 18 seconds per side.

Across the V-LDI series, support for multiple job lists is a given, ensuring that the number of panels per job does not impede production throughput. Job exchanges are seamlessly managed through communication protocols with the connected peripheral machines, simplifying the workflow for operators.



## V3-LDI Automation

The V3-LDI is the pinnacle of the V-LDI Series, developed by Techno System. This peripheral automation system has been meticulously engineered to load and unload high-end LDI and DI machines.

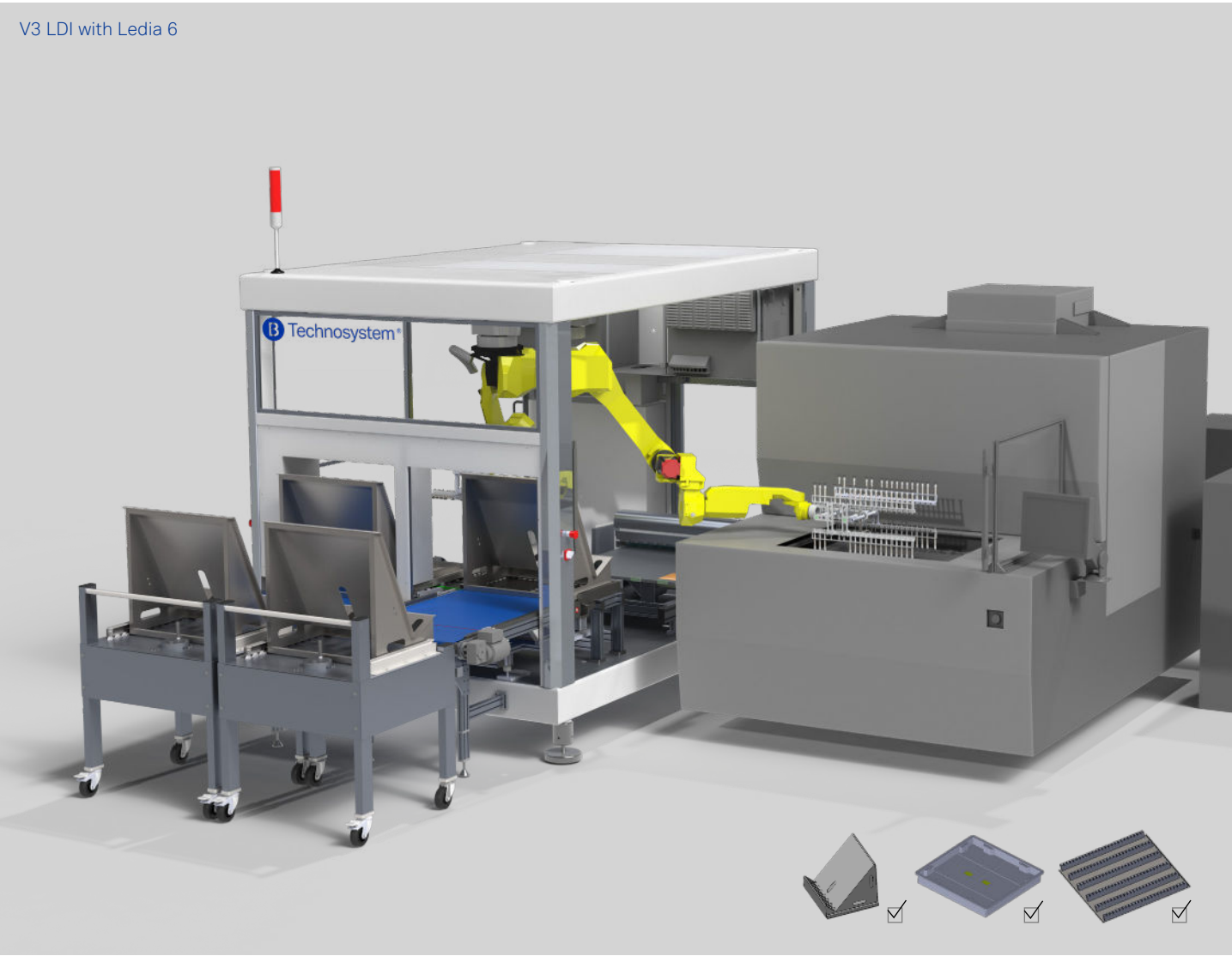
The ever-increasing demand for reduced dry film exposure times necessitated a loader capable of achieving the required exposure times to maximize production. The V3-LDI can operate at an astonishing rate of under 10 seconds per cycle (excluding panel exchange), and includes critical tasks like cleaning and CCD panel alignment.

What sets this automation system apart is its utilization of two six-axis robots that can operate simultaneously, ensuring a swift throughput. The system boasts a double and a single cup gripper, automatically adjustable to accommodate panels of varying sizes. Additionally, it features a horizontal table cleaner designed for extremely thin cores and a CCD camera for on-the-fly alignment.

A standout feature of the V3-LDI is its versatility, capable of handling both dry film panel exposure on L racks and solder

mask panels on slotted racks. This unique capability sets it apart in the market. Furthermore, the automation system incorporates a patented L rack/slotted rack automatic exchange, making it an invaluable tool for high-production environments while preventing any downtime in the exposure machine.

The user-friendly Techno System front-end serves as a valuable tool for operators, enabling them to efficiently generate job queues on multiple L racks or slotted racks. Across the V-LDI series, support for multiple job lists is a given, ensuring that the number of panels per job does not impede production throughput. Job exchanges are seamlessly managed through communication protocols with the connected peripheral machines, simplifying the workflow for operators.



## V4-LDI Loader/Unloader

The V4 -LDI Loader/Unloader is an advanced online automation system designed for DI or LDI machines equipped with a double exposing table.

This versatile system can operate either fully inline or with the inclusion of a loader to input panels and an unloader to collect them after processing.

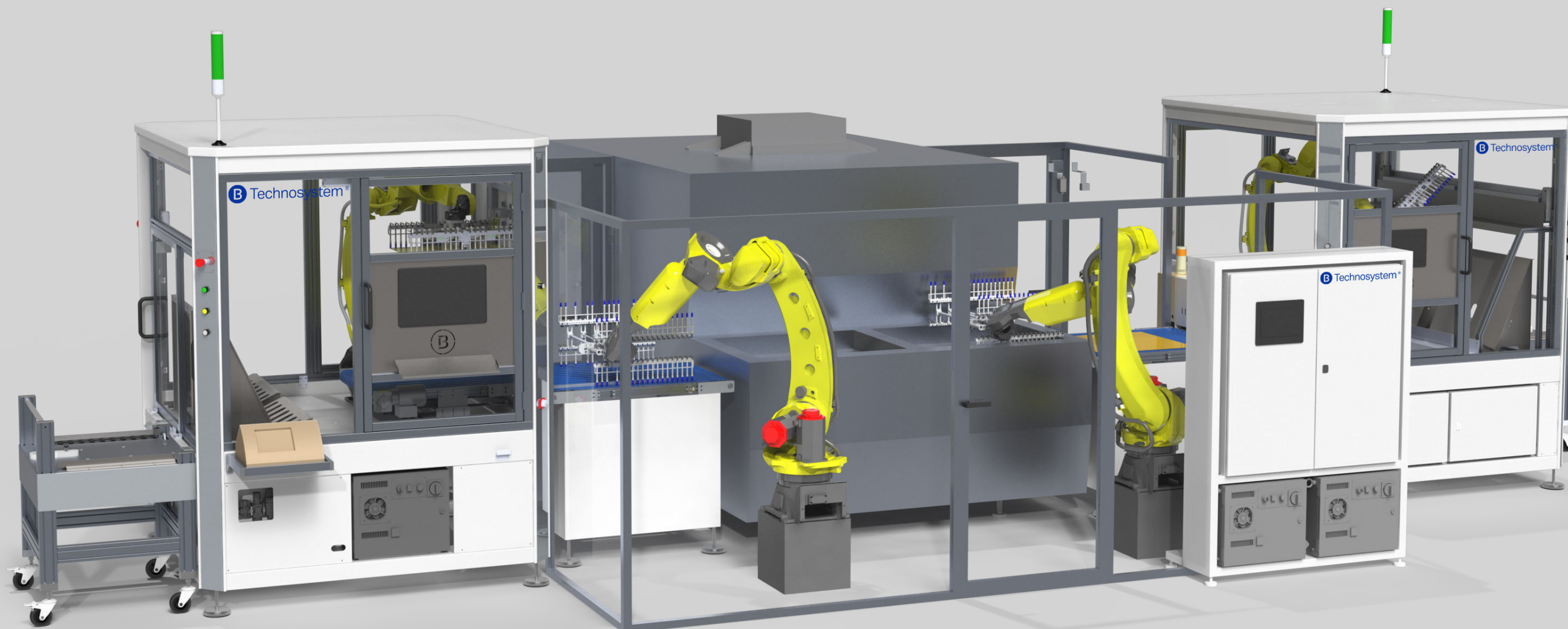
The typical configuration for the V4-LDI is an online system where panels are fed directly from the cut-sheet dry film laminator. They are then seamlessly introduced into the DI for side A and B exposure before proceeding to the mylar remover and subsequent entry into the developing line.

The system features an entry conveyor equipped with CCD alignment and CCD QR code recognition, an inline cleaning station, two six-axis robotic arms fitted with double-panel size adjustable suction cup grippers, and an exit conveyor. The panel flipping process is managed by a handshaking mechanism between the two robotic arms.

Remarkably, the V4-LDI can complete a cycle in under 8 seconds, ensuring it meets the stringent demands of line speed rates. Safety is a top priority, and the system is fully enclosed to comply with all security regulations.

The user-friendly Techno System front-end proves invaluable to operators, allowing for the efficient generation of job queues on multiple L racks or slotted racks. Across the V-LDI series, support for multiple job lists ensures that the number of panels per job does not hinder production throughput. Job exchanges are seamlessly managed through communication protocols with the connected peripheral machines, streamlining the workflow for operators.

V4 LDI Loader/Unloader







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