ADS Master L production lines

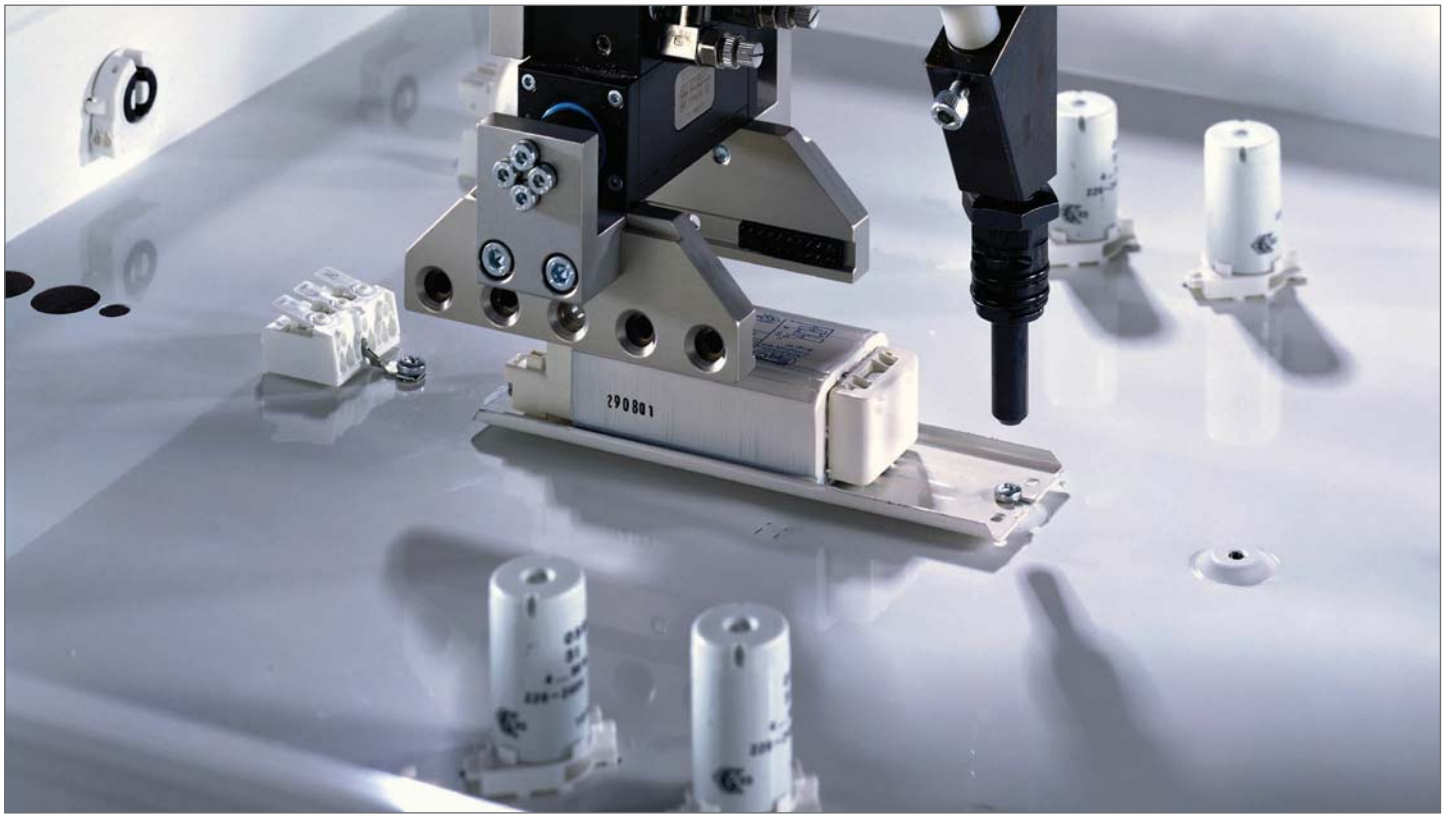
Automation solutions for the lighting industry

Your Connection to Light

When your requirements grow,
we grow too.

Welcome to the world of automatic luminaire production. With our ADS Master L machine series, we offer configurations which are tailored to your needs and can be adapted to individual production requirements. Modular superstructures permit an almost limitless number of combination options. Depending on your requirements, different options can be integrated into the system in order to further improve your production processes. As a partner in the global lighting industry, we provide consultation, engineering and production services during all phases: from conception to service after commissioning. Whatever your requirements, we will help you implement them, professionally.

Example of system layout



Optional automatic ballast assembly

ADS Master L. Production lines up to fully automated production.

Like all other companies, lighting manufacturers are continuously on the lookout for rationalisation opportunities in order to secure their profitability in the long term. With increasing pressure from the competition in saturated markets, one important factor for success is a creative combination of innovative products and automated production processes. Here, our „automatic direct wiring of standard components“ (ADS) has been offering decisive competitive advantages to the lighting industry for over ten years. Regardless of the size of the company in question, this system can be used on an individual basis and offers high production speeds with consistent high quality. For mass production and smaller batch sizes alike, it proves its flexibility time and again.

The ADS Master L presented here already provides a great deal in the basic version: automatic wiring and final luminaire testing, plus two manual workstations for manual component assembly. Depending on requirements, the system can be supplemented by additional modules and upgraded with automatic component assembly into extended production lines. There are almost no limits. As the leading global supplier, we are very familiar with production processes in the lighting industry and know what is important. With the ADS Master L by BJB, you benefit from the latest technological developments in order to rationalise production even further and meet the constantly increasing, high-level quality and safety standards in the lighting industry.

ADS Master L.

The beginning is always easy.

High production volumes are not achieved by magic - just the result of well-planned production.

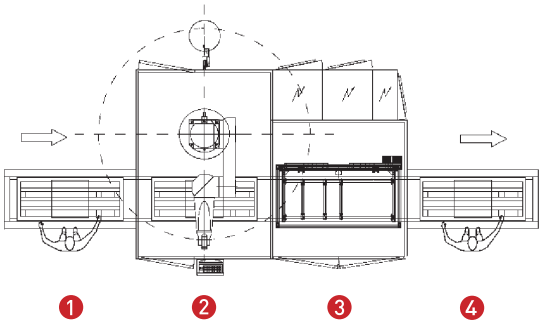
The entire system is operated via an integrated industrial PC and a flat screen terminal that is integrated into the safety fence. An Adept Viper 1700 6-axis robot with a Smart Controller is used to wire the luminaires. The size of the standard workpiece carriers is 1700 x 700 mm. When a type change is required, the workpiece carrier superstructures are quickly and flexibly installed without tools using the Quick Lock system.

The average wiring time per cable is 3 to 4 seconds. It depends primarily on the optimised arrangement of the components to be wired and the related path of the robot. The cycle time of the overall system consists of the wiring time and the time needed to replace the workpiece carriers.

Functional description: Manual workstations 1 and 2 occupied

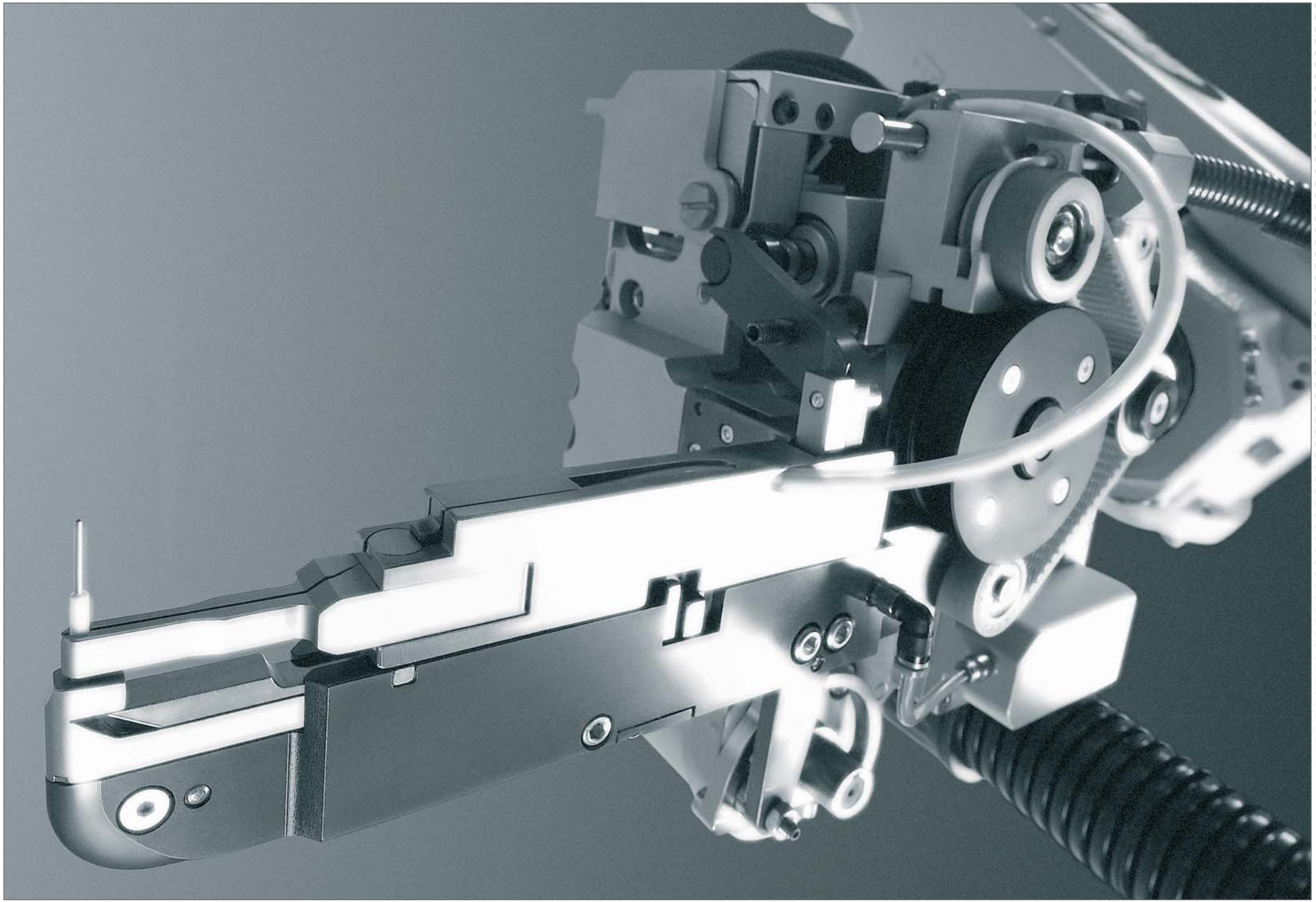
1. The luminaire body which is equipped with components is placed onto the workpiece carrier by the system operator at the manual workstation 1.
2. After release by pressing a button, the workpiece carrier leaves the manual workstation and travels via the upper conveyor belt towards the wiring station.
3. At the wiring station, the luminaire is automatically wired using the principle of pushwire connection technology.
4. As soon as this procedure has been completed, the luminaire is transported on the workpiece carrier into the test station. The testing mechanism moves downwards and connects the different components with the test system.
5. After the electrical test, the testing mechanism returns to its home position and the workpiece carrier is transported to the second manual workstation.
6. Here, the test result is displayed and the luminaire can be removed.

The test process runs in parallel to the wiring process. Each manual workstation can be deactivated so that the system can only be operated by one person.

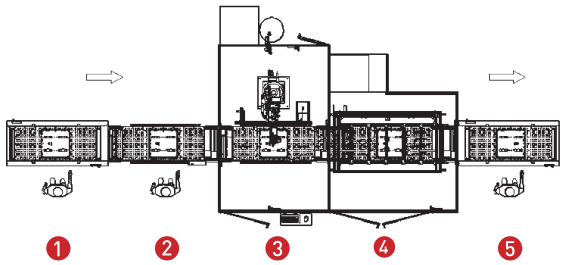


1. First manual workstation
2. Wiring station
3. Testing station
4. Second manual workstation

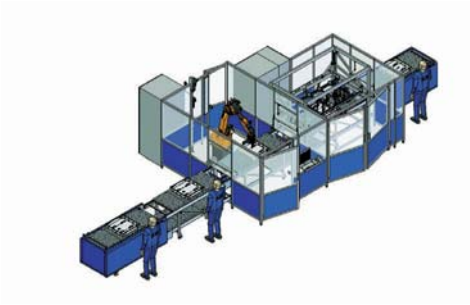
Example 1: For a linear production flow, the basic version has been supplemented with a second manual workstation. In this configuration, the ADS system is suitable for use for the flexible production of recessed luminaires, surface-mounted luminaires, light strips (battens) and covered, waterproof luminaires.



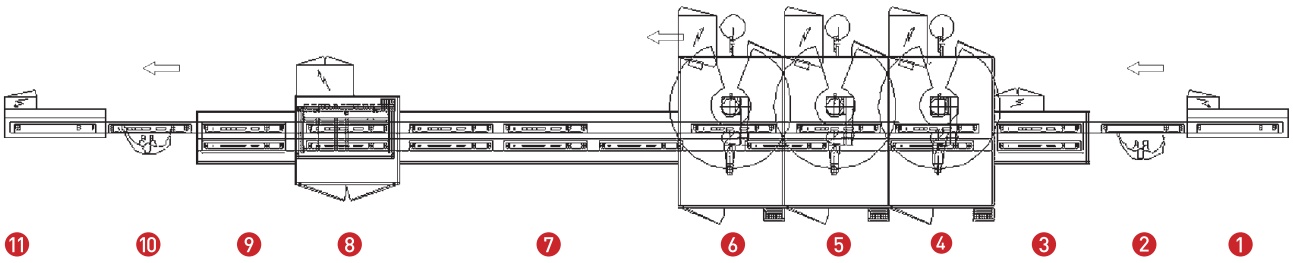
Exemplary flexibility.



1. First manual workstation
2. Second manual workstation
3. Wiring station
4. Testing station
5. Third manual workstation

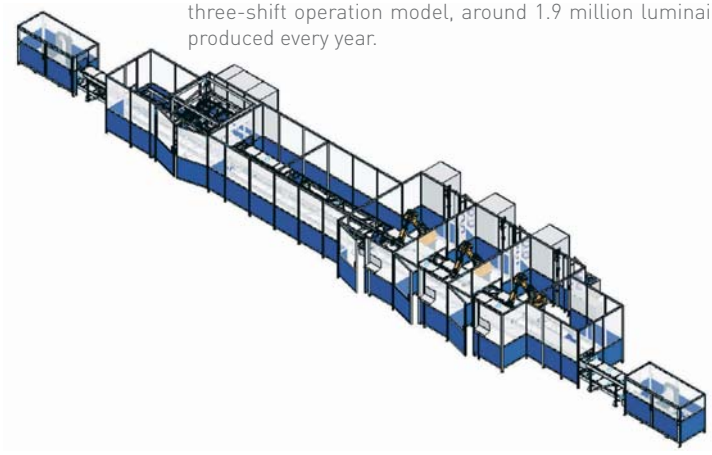


Example 2: In this case we have built a ADS-System with 3 manual workstations. These allow the flexible manufacturing of recessed luminaires, surface fixing luminaires, batten fittings and waterproof luminaires.



1. Lift 1
2. First manual workstation (loading station)
3. Automatic workpiece carrier transverse conveyer
4. Wiring station
5. Wiring station
6. Wiring station
7. Buffer station
8. Testing station
9. Automatic workpiece carrier transverse conveyer
10. Second manual workstation (unloading station)
11. Lift 2

Example 3: We built this production line from ADS Master L System components in accordance with customer requirements. Using a three-shift operation model, around 1.9 million luminaires can be produced every year.



ADS Master L.
The difference is in the details.

Automatic tool measurement
In order to obtain the best possible wiring result, the wiring tool must be set perfectly. This happens automatically with the aid of the tool measurement. In order to do this, the robot travels with the wiring tool gripper through a laser fork light barrier, and in so doing determines the position of the gripper relative to the robot flange. The newly measured values can then be adopted permanently.

In order to check the setting of the wiring tool, the wire tip can also be checked for the position of the initial and final pushwire terminals. If the deviation is too great, the system operator is requested to check the setting of the wiring tool and to correct it, if necessary.

Improved wiring tool with collision module
The improved wiring tool is particularly narrow and can wire both horizontally and vertically. As the core component of the system, it is a necessary requirement for successful and efficient luminaire wiring automation. Together with the dynamic 6-axis robot, it provides very high wiring speeds. More advantages: simplified maintenance and a high degree of availability. It is now even safer thanks to the collision module, which can prevent serious damage to the wiring tool. When a collision occurs in the direction of travel, e.g. with a series connection device, the entire wiring tool pivots backwards and the robot immediately comes to a standstill. The operator can correct the error in the operating area and click the wiring tool back into the home position.

Intuitive operating interface
The ADS Basic System is simple and intuitive to use. The production data is shown in the main menu, and production can be influenced directly using the mouse or keyboard.

A menu-guided user interface is provided in order to optimise and adapt luminaire programs. In the clearly structured submenus, parameters such as wiring speeds can be changed, positions can be moved and lines can be re-arranged. All changes are incorporated and implemented directly by the machine following a plausibility check.

The graphic display of the current luminaire with the corresponding repositioning plan makes it easier to enter data for the specific luminaire. New programs can be created based on existing data. The operator can use this function in parallel with the ongoing production to prepare new luminaires.

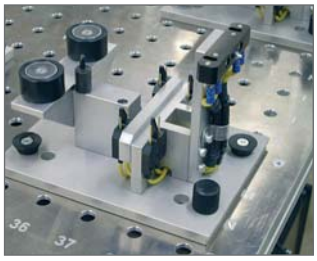
Test system with equivalent load
The test system checks the luminaires in conformance with EN 60598. All test results are saved and prepared for statistical evaluation. The test system can be individually adapted with regard to the number and type of test adapters. In addition to the standard checks (functional check with equivalent load, protective earth conductor check, high voltage check, insulation resistance check and passage test between „L" and „N"), additional checks such as dimming 1-10 V, DALI, DSI and emergency lighting functions are also possible.
The equivalent load is based on programmable load resistance as an equivalent to the coil and gas path resistances in a fluorescent lamp. The resistance values of the simulated fluorescent lamps are stored in a database and can be retrieved and supplemented by the user as required.

In summary, the ADS test system has the following features:

1. Future-proofed testing through freely programmable resistances
2. Very short testing cycle times due to parallel checks
3. Identification of faulty connection points and wiring errors
4. Special functions such as emergency lighting, analogue and digital dimming
5. Optional dummy testing (test system check before start of production)
6. Easier to maintain and more cost-efficient operation (no lamps)
7. Menu-guided control via the central ADS user interface
8. Archiving of test results and optional print-out of labels

Flexible workpiece carrier
The flexible workpiece carriers are set up quickly and, above all, without tools for the type of luminaire to be processed. This is achieved using „fixing elements" in connection with the matrix on the workpiece carrier. This system also guarantees that future generations of luminaires can be accommodated without changing the workpiece carrier.

ADS Master L.
How to expand your options.



Workpiece carrier superstructures
Luminaire-specific workpiece carrier jigs. The jigs can have integrated connection for testing.

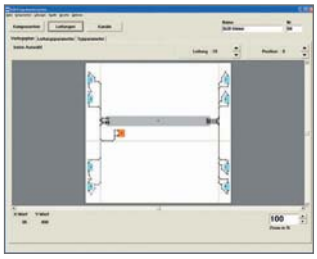
Test adapter
In addition to the existing test adapters for T8 and T5 lampholders, a large number of additional test adapters are also available for other lampholder systems. Special constructions for a specific luminaire are possible.

Vertical pushwire direction
Bend positioners curve the end of the cable held in the gripper into the vertical position, and integrated guide elements guarantee precise positioning.

Label printer
Label printers provide the option of documenting and tracking a luminaire. After the luminaire has been checked in the test station, a self-adhesive label is printed and manually fixed in the luminaire.

Additional checks
If required, additional checks and other special functions such as equipment for the manual workstations (open-front storage box, automatic screwdrivers) can be integrated into the system.

Unlimited learning capabilities with the ADS Offline programming systems.



ADS Offline PC version

With the ADS Offline programming system, entire wiring programs can be simply and effectively created independently of production. For this purpose, the luminaire is created and positioned over coordinates. The components are then loaded from the integrated component database and inserted in accordance with the drawing. The line paths are then determined by specifying cable channels. After the connection points have been defined, the system automatically calculates the best wiring path on the basis of the cable channels which have been defined. Pre-defined operation strategies make it easier to create a wiring program.

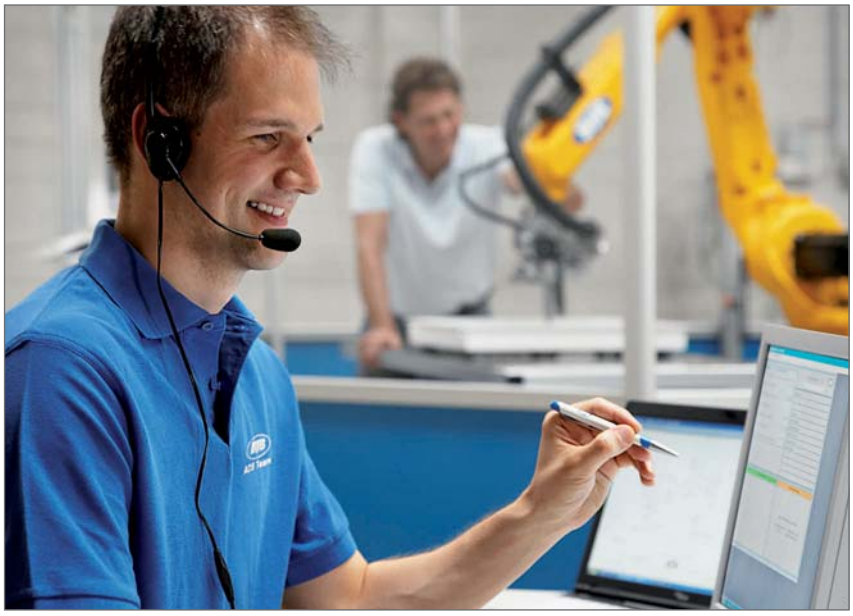
The program is available on user-friendly, Windows-based software. The completed wiring program can be stored on diskette, flash memory or in the network and then read by the robot controller.

ADS Offline with infrared camera system

In addition to the software described above, this system extension consists of a table with a standard workpiece carrier for holding the luminaires and an infrared camera system with a special teach target that contains the measurements of the wiring tool. The position of the wiring tool is recorded by the infrared camera system using reflection balls. The PC is integrated in the system. Using the teach target, components can be positioned or individual robot positions defined.

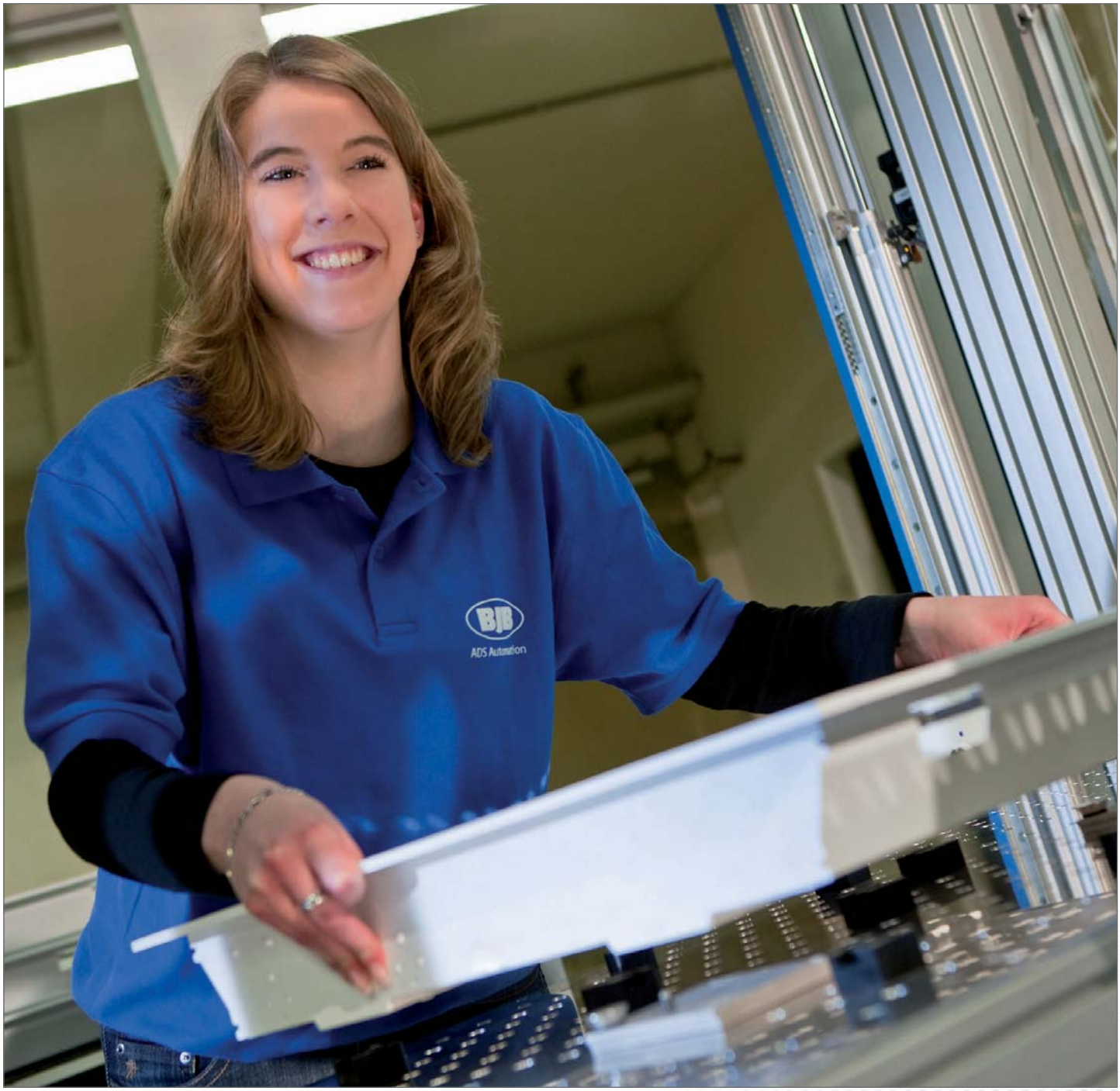
The system is used with luminaires where components are difficult to access and guarantees the user the possibility of simulating offline the full flexibility of the 6-axis robot.

And we've saved the best news for the end. Lifetime support is included!



ADS Lifetime support

After an ADS system is commissioned, a team of BJB specialists remain available for consultation and support to help system operators. Trained staff are available on workdays from 7am to 9pm CET via PC or telephone hotline to answer your questions on programming, operation or maintenance all free of charge. Remote diagnosis is standard for all ADS systems. The ADS support package is rounded off by a comprehensive stock of replacement parts and components.



As with all technical products, the ADS automation systems from BJB are constantly being further developed and adapted as progress is made in technology and experience gained in the field. For this reason and for your benefit, we retain the right to change design features and technical data. Only our written confirmation of order is binding.

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