



Catalog

2013

www.fobosgas.com





History

Nowadays,
Fobos Auto Ltd
 has the following main activities:

Fobos Auto is leader on the Bulgarian automotive market for over 20 years and is currently one of the largest companies in Bulgaria for gas injection systems. Products offered by Fobos Auto are delivered in more than 15 countries worldwide. In 2011, the company's exports were 65 percent of its total income.

Fobos Auto's products are sold in Serbia, Greece, Ukraine, Romania, Turkey, Thailand, India and many other countries.

The company offers safe, efficient and environment-friendly solutions.

Company's main objective is providing innovative products with the

highest quality on the Bulgarian and international market. Auto Fobos has a partnership network all over Bulgaria. Currently, the network includes more than 70 professional autogas workshops, which benefit from our marketing, technical support and training.

By its online shop, Fobos Auto offers over 500 vaporized products, including systems for converting vehicles for propane butane and methane.

THE SALES STRUCTURE OF INDIVIDUAL COMPONENTS IS:

- LPG and CNG products for automotive gas systems.

- Production of cable harnesses and electronics for the automotive industry needs.
- Sales of LPG and CNG components from global OEMs.

The result of extensive experience, engineering and development of R & D activity is the undisputed leadership in the field of alternative fuel systems for motor vehicles. All prototypes undergo the full range of laboratory tests to assess their reliability in extreme environmental conditions. Tests include: air conditioning, shock, vibration, moisture and corrosion. Then we perform similar tests in actual cars.

Fobos Auto invests in building a modern factory. To provide leadership

within the industry, Fobos Auto is constantly developing its machinery and equipment. Retrofitting of machines is done with company funds and co-financing from the EU. The production of Fobos Auto takes place in three workshops: Electronics, SMT, wiring harnesses and mechanical workshop . The investment projects of Fobos Auto includes the purchase of additional equipment and construction of new production facilities, which will guarantee an increase in the product capacity of the company and maintaining high product quality. The strategy for success includes optimal use of market potential and intensive development of the company in the production and sales of LPG and CNG components



Electronics

Gas/Petrol switch over relay time

Suitable for carburetor and mono injection type of automobiles Protective function covering the system in case of an emergency cut off of the engine: The gas valves are automatically switched off up to 4 seconds after an emergency engine cut off to avoid any gas leakage even if the ignition key is turned on.

Smooth adjustment of the time needed for initial gas supply covering a wide range of 0 to 8 seconds which enables the engine to start on gas effortlessly.
Anti-noise protection protecting all input and output exits with filtrating groups.

The harness joins the commutator with a highly reliable connection which helps make the installation easier.



ECU set

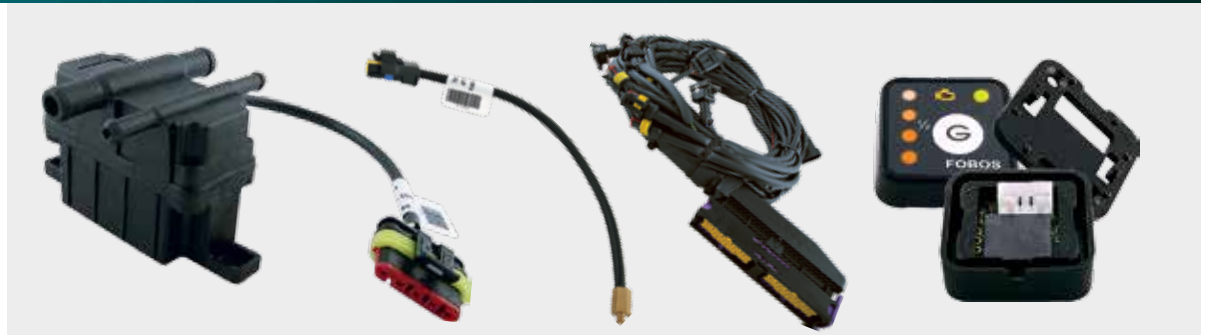
Fobos 1 **OBD II** ECU set



Fobos 1 ECU is designed in a way to work in a busy environment. The body consists of a robust, air-proof aluminum frame. What distinguishes our system from its competitors is high reliability, due to the use of high-technology components that were designed especially for automotive use.

The main signals used in the process of control are: temperature of the cooling flow inside the reducer, temperature and pressure of the gas after the reducer, R.P.M., condition of the petrol injectors, pressure inside the intake manifold, two oxygen sensors, pressure inside the accumulator, gas/petrol switch over and the amount of gas inside the tank.1

Fobos 1 ECU
Components
Combined sensor
Sensor temperature
Harness 1 ECU
Change-over switch



Fobos 2 **OBD II** ECU set

Fobos 2 ECU based on Fobos 1, maintaining its complete functionality however only compatible with 3 and 4 cylinder aggregates. The body consists of a robust, air proof plastic box. Range of operation from -40°C up to +125°C. Two 24 pin connectors by FCI have been used.



Combined sensor

A temperature sensor which monitors the temperature of the vaporized gas, and a sensor for the fluxional pressure of the vaporized gas, which monitors the pressure within the system and provides the necessary data to the gas ECU.



Sensor temperature

Monitors the temperature of the cooling liquid in the reducer.



Harness 2 ECU

The harness of FOBOS gas injection system consists of a bundle of insulated tubing and FCI and AMP connectors. Every single cable is wrapped up in insulated tubing.



Change-over switch

Changeover switch installed in the cabin at a comfortable place for the driver. By pressing it changes to the desired mode - Turbo, Normal or Economic. The automatic switch allows manual and automatic mode of work. It indicates also the fuel level in the tank.

Fobos 4 ECU set



Fobos 4 ECU based on Fobos 2, with a much smaller box and only one 24 pin connector of FCI, maintains full functionality and supports 3 and 4 cyl. aggregates.



Combined sensor

A temperature sensor which monitors the temperature of the vaporized gas, and a sensor for the fluxional pressure of the vaporized gas, which monitors the pressure within the system and provides the necessary data to the gas ECU.

Sensor temperature

Monitors the temperature of the cooling liquid in the reducer.

Harness 2 ECU

The harness of FOBOS gas injection system consists of a bundle of insulated tubing and FCI and AMP connectors. Every single cable is wrapped up in insulated tubing.

Change-over switch

Changeover switch installed in the cabin at a comfortable place for the driver. By pressing it changes to the desired mode - Turbo, Normal or Economic. The automatic switch allows manual and automatic mode of work. It indicates also the fuel level in the tank.

LPG Systems

OBD II Fobos 1

HIGH-END GAS INJECTION SYSTEM FROM 1 TO 8 CYL. FOR LPG

Fobos 1 is designed for all vehicles from 1 to 8 cylinder petrol engines and provides precise dosage of fuel, using advanced software, which works with automatic construction of a gas map, which is constantly adjusting to the current parameters of the petrol system, considering the engine's load and RPM.

Fobos 1 has latest generation gas controller, which thanks to the diagnostic information from the petrol ECU (OBD 2), ensures precise dosing of gas and makes corrections in real time by the vehicle's petrol trim.

It has 32-bit high-grade gas controller, entirely built of components for automotive use. Fobos 1 ensures integration with the default settings of the car and covers the Euro 5 emission standards.

 **Warning:** unsupported conversion engines with direct injection.



Certificate
№ 67 R - 01 4542



OBD II

Fobos 2

HIGH-END GAS INJECTION SYSTEM 1 TO 6 CYL. FOR LPG

Fobos 2 is designed for all vehicles from 1 to 4 cylinder petrol engines and provides precise dosage of fuel, using advanced software, which works with automatic construction of a gas map, which is constantly adjusting to the current parameters of the petrol system, considering the engine's load and RPM.

Fobos 2 has latest generation gas controller, which thanks to the diagnostic information from the petrol ECU (OBD 2), ensures precise dosing of gas and makes corrections in real time by the vehicle's petrol trim.

It has 32-bit high-grade gas controller, entirely built of components for automotive use. Fobos 2 ensures integration with the default settings of the car and covers the Euro 5 emission standards.



Certificate
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Fobos 4

BUDGET GRADE GAS INJECTION SYSTEM FROM 1 TO 4 CYL. FOR LPG

Fobos 4 is designed for all vehicles from 1 to 4 cylinder petrol engines and provides precise dosage of fuel, using advanced software, which works with automatic construction of a gas map, which is constantly adjusting to the current parameters of the petrol system, considering the engine's load and RPM.

It has 32-bit high-grade gas controller, entirely built of components for automotive use. Fobos 4 ensures integration with the default settings of the car and covers the Euro 5 emission standards.



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CNG Systems



OBD II Fobos 1

HIGH-END GAS INJECTION SYSTEM 3 TO 4 CYL. METHANE

Fobos 1 is designed for all vehicles from 1 to 8 cylinder petrol engines and provides precise dosage of fuel, using advanced software, which works with automatic construction of a gas map, which is constantly adjusting to the current parameters of the petrol system, considering the engine's load and RPM.

Fobos 1 has latest generation gas controller, which thanks to the diagnostic information from the petrol ECU (OBD 2), ensures precise dosing of gas and makes corrections in real time by the vehicle's petrol trim.

It has 32-bit high-grade gas controller, entirely built of components for automotive use. Fobos 1 ensures integration with the default settings of the car and covers the Euro 5 emission standards.

 **Warning:** unsupported conversion engines with direct injection.



Certificate
Nº 110 R - 005668



OBD II Fobos 2

MIDDLE CLASS GAS INJECTION SYSTEM 3 TO 4 CYL. METHANE

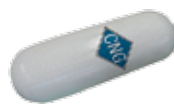
Fobos 2 is designed for all vehicles from 1 to 4 cylinder petrol engines and provides precise dosage of fuel, using advanced software, which works with automatic construction of a gas map, which is constantly adjusting to the current parameters of the petrol system, considering the engine's load and RPM.

Fobos 2 has latest generation gas controller, which thanks to the diagnostic information from the petrol ECU (OBD 2), ensures precise dosing of gas and makes corrections in real time by the vehicle's petrol trim.

It has 32-bit high-grade gas controller, entirely built of components for automotive use. Fobos 2 ensures integration with the default settings of the car and covers the Euro 5 emission standards.



Certificate
№ 110 R - 005668



Fobos 4

BUDGET GRADE GAS INJECTION SYSTEM 3 TO 4 CYL. METHANE

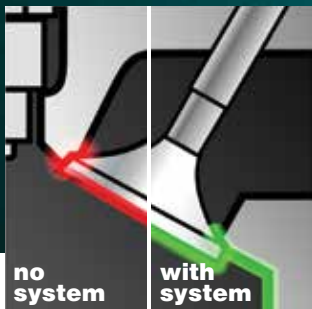
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V-lube

VALVE SAVER SYSTEM

WHY TO CHOOSE A VALVE SAVER KIT

LPG and CNG are the cheapest fuels of the future. Their price is lower than the petrol, they do not contain sulfur and lead and reduces the pollution of the environment.

However they have one drawback - they are "dry burning fuel" and they haven't got the lubricating properties of the gasoline, this leads to premature wear and damage of the the valves and valve's seats. To avoid this it is necessary to use a system that protects the valves and their seats - V-LUBE VALVE SAVER

The liquid V-LUBE VALVE SAVER ADDITIVE is high temperature grease, specially designed and certificated to reduce the wear and tear of the valves and their seats for cars powered by LPG and CNG.



V-LUBE
LPG VALVE SAVER - ADDITIVES - TECHNICAL SPRAYS

Multivalves OMB

MULTIVALVES OMB

Fobos Auto Ltd uses multivalves from one of the largest companies in the world that produces gas equipment - OMB.

The multivalves are compatible with the following types of tanks: Cylindrical 30°; Cylindrical 90°; Toroidal 0°; Toroidal 30° and Toroidal 37°.

They are equipped with a thermal safety handheld tap, gas filter, check valve, excess flow valve and a device that takes into account overpressure and 80% filling.





Hoses

Thermoplastics Hoses



THERMOPLASTIC HOSE FARO

Thermoplastic hose Faro is specifically designed to meet the quality requirements and safety standards in the global market and it is guaranteed by specialized certificates.

ATTENTION: the hose can be assembled only and exclusively with FARO FITTINGS

Max working pressure: 30 bar

Max working temperature: -25°C +125°C

Application: LPG

Certification: ECE R67-01



Injectors



INJECTORS RAIL

For the precise dosing of the fuel "gas injection system Fobos" uses high quality and fast working gas injectors. Mainly relies on the products of the Italian company RAIL S.p.A. The company is an unconditional leader in its field, with an annual production above 500 000 pieces



LPG

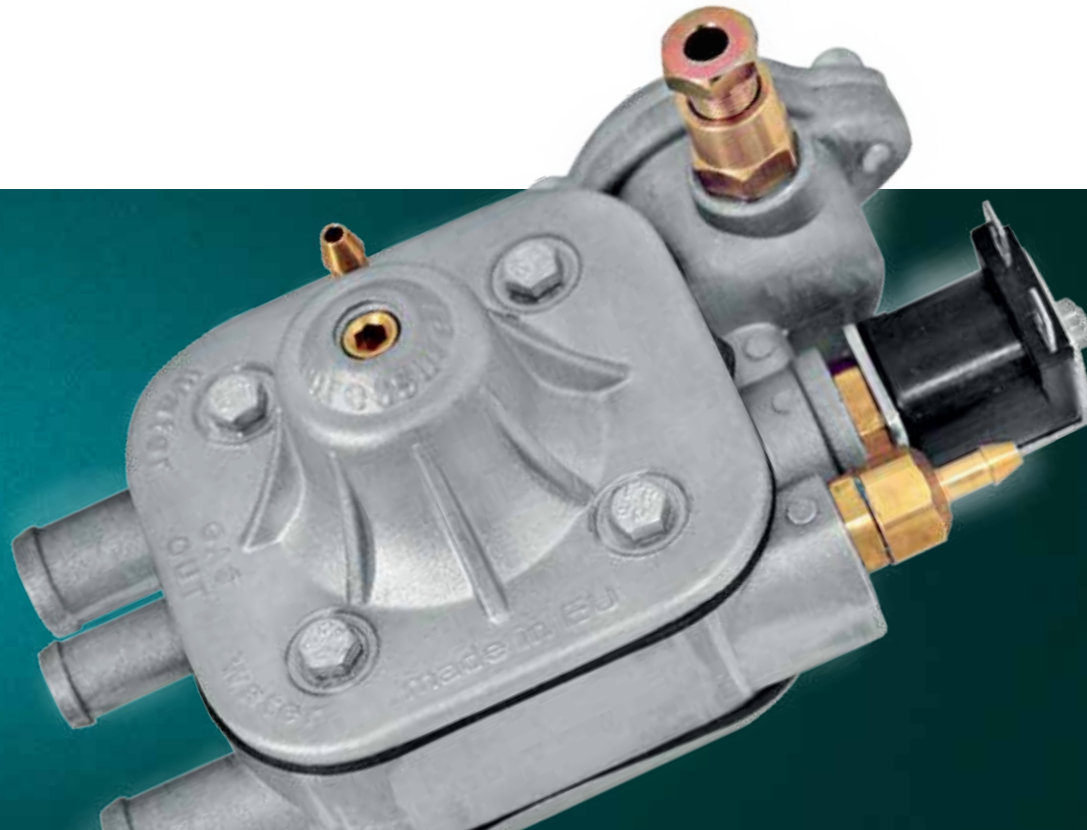
CNG

Reducers

FOBOS REDUCERS

Fobos Auto uses reducers only by established manufacturers that have proven their leadership positions and quality worldwide.

The company offers the products of: RAM, Tomasetto, Stefanelli, Magic, NIGS, Romano and others.



Invitation for cooperation



Fobos Auto offers a complete range of working products for installation of gas injection systems and it works only with established manufacturers and original products, as providing short delivery times.

With us you have the freedom to offer services, complying with the individual customer needs. We have an individual approach to each idea in order to achieve maximum success. We rely on flexible financial models.

Fobos Auto is an innovative company which offers comprehensive solutions for construction of gas systems of petrol cars, providing its partners the most important for every successful business - innovative products, professional service and a constant technical support. We care about our clients and highly appreciate their loyalty and feedback.

With over 20 years experience in dealing with clients, Fobos has a very good organization and technological opportunities for qualitative and rapid service.

The brand carries the identity of a product, service or company. Fobos has been imposed trademark in Bulgaria and on the international market, proved by thousands of customers and dealers in the country and worldwide.

„We care about our clients and highly appreciate their loyalty and feedback.“



„With us you have the freedom to offer services, complying with the individual customer needs.“



Accessories



COVERS

High quality and stylish covers Izi Sport specially designed to protect the seat, fender and spare tire.



Software

Fobos GAS software

The software for the Fobos Gas injection system is unique with its ability to install and adjust each value of the system according to the preferences of the client and the specifics of the automobile. Thus a more flexible and precise regulation is ensured.

Attention is paid to the self-diagnostic functions of the system and the diagnostics of the vehicle which aim to make the diagnostics of all the system components fast and accessible. A system with codes for mistakes is established, similar to that of the petrol ECU.

- Possible faults:** **1** Low gas pressure; **2** Low reducer temperature; **3** Very low RPM
4 No signal from the ECU; **5** Malfunctioning gas pressure sensor;
6 Malfunctioning MAP sensor; **7** Malfunctioning reducer temperature sensor; **8** Malfunctioning gas temperature sensor; **9** The

automobile starts on gas; **10** Malfunctioning button; **11** Overheating of a gas injector driver; **12** Overheating of the gas ECU; **13** Failure of the +5V pressure of the sensors; **14** Failure of the pressure of the gas injectors and valve; **15** Malfunctioning sensor of the reducer temperature (short circuit); **16** Gas Valve Trouble; **17** Individual Gas Injector Trouble (short circuit); **18** Individual Gas Injector Trouble (open circuit); **19** Switch-over To Gas due to time-out

The software of the system is extremely flexible and enables the driver to regulate the system according to individual preferences, thus meeting the expectations of even the most exacting clients providing for standards Euro 3 and Euro 4. It has been designed according to the strictest requirements in the field of gas injection systems.

By downloading the appropriate firmware the system can be made to operate independently, not in series. In this way the fuel will be supplied according to the configured settings and engine environment.



The START page provides some basic information about the system installed on the vehicle, diagnostic trouble codes of the supported failures and gives a possibility to load existing well known settings and/or to begin a new configuration session.



There are several parameters that define how the vehicle to change back to PETROL depending on driving conditions



The FINE TUNING operation is available in two independent modes:

- The major OBD-II parameters can be monitored continuously while the operation is in progress.



Attention is paid to the diagnostic and the self-diagnostic functions of the system which aim to make the use of the software faster and more accessible.



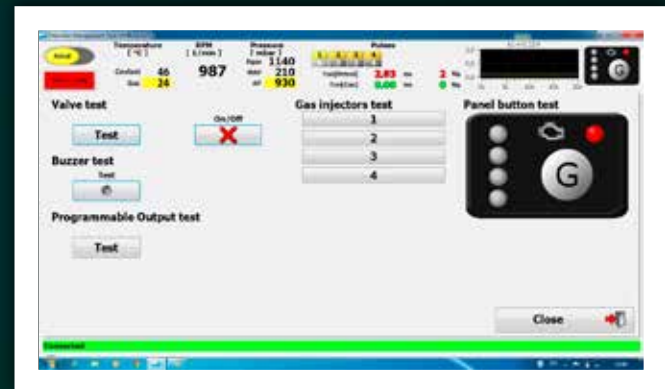
A set of features concerning different injection strategies during on and immediately after CUT-OFF is introduced:



Control, monitoring and log capabilities.

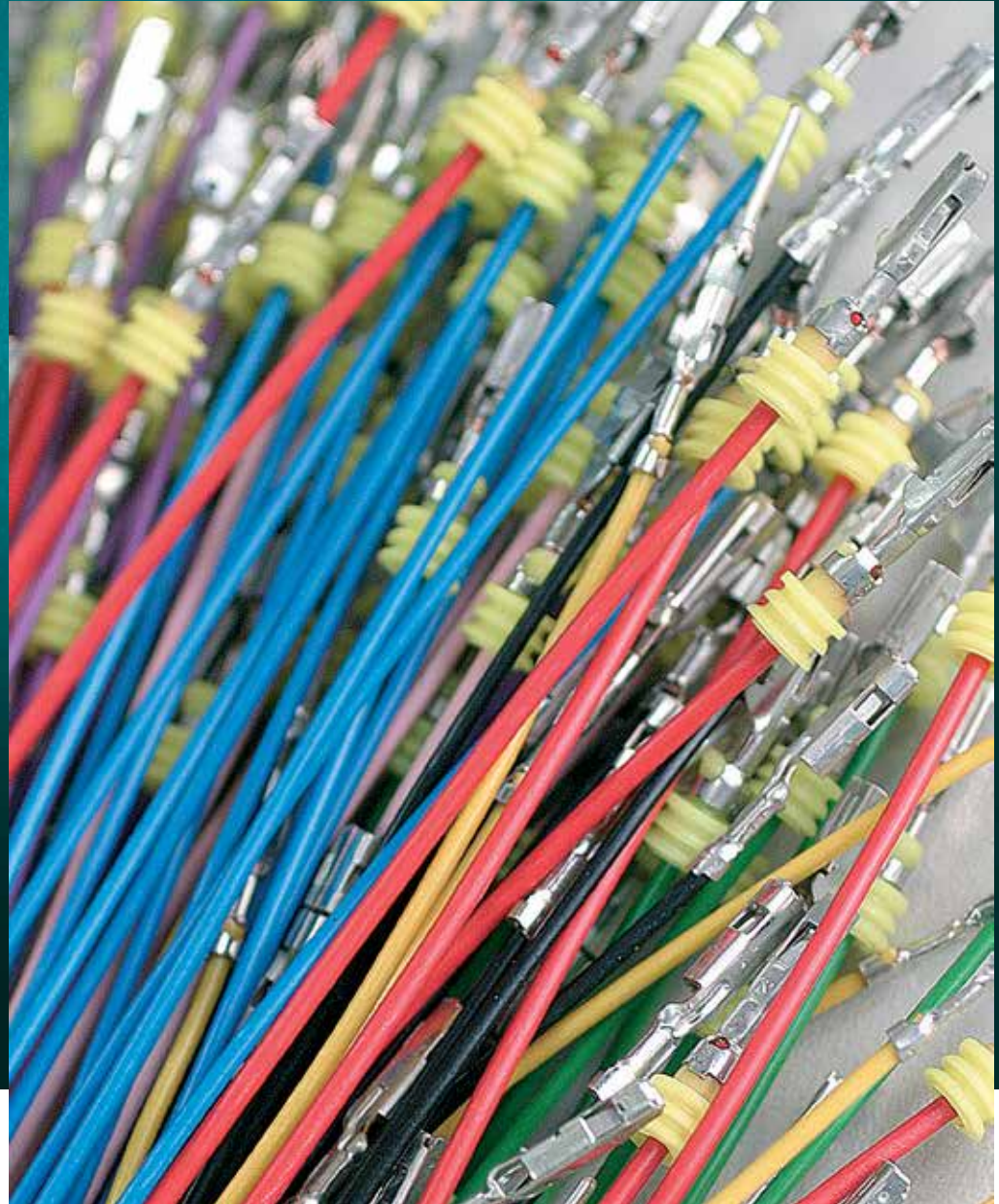


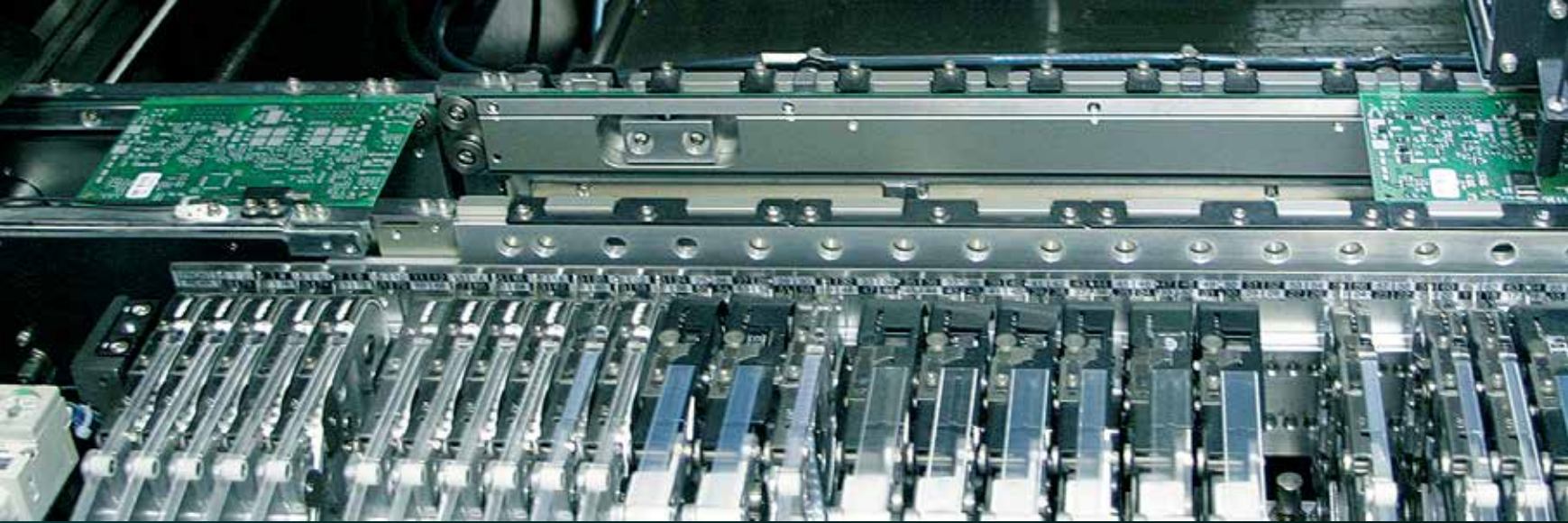
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The self-diagnostics plays an important part in detecting faulty components. A few different tests have been developed:

Cabel Confection





Automotive Electronics



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