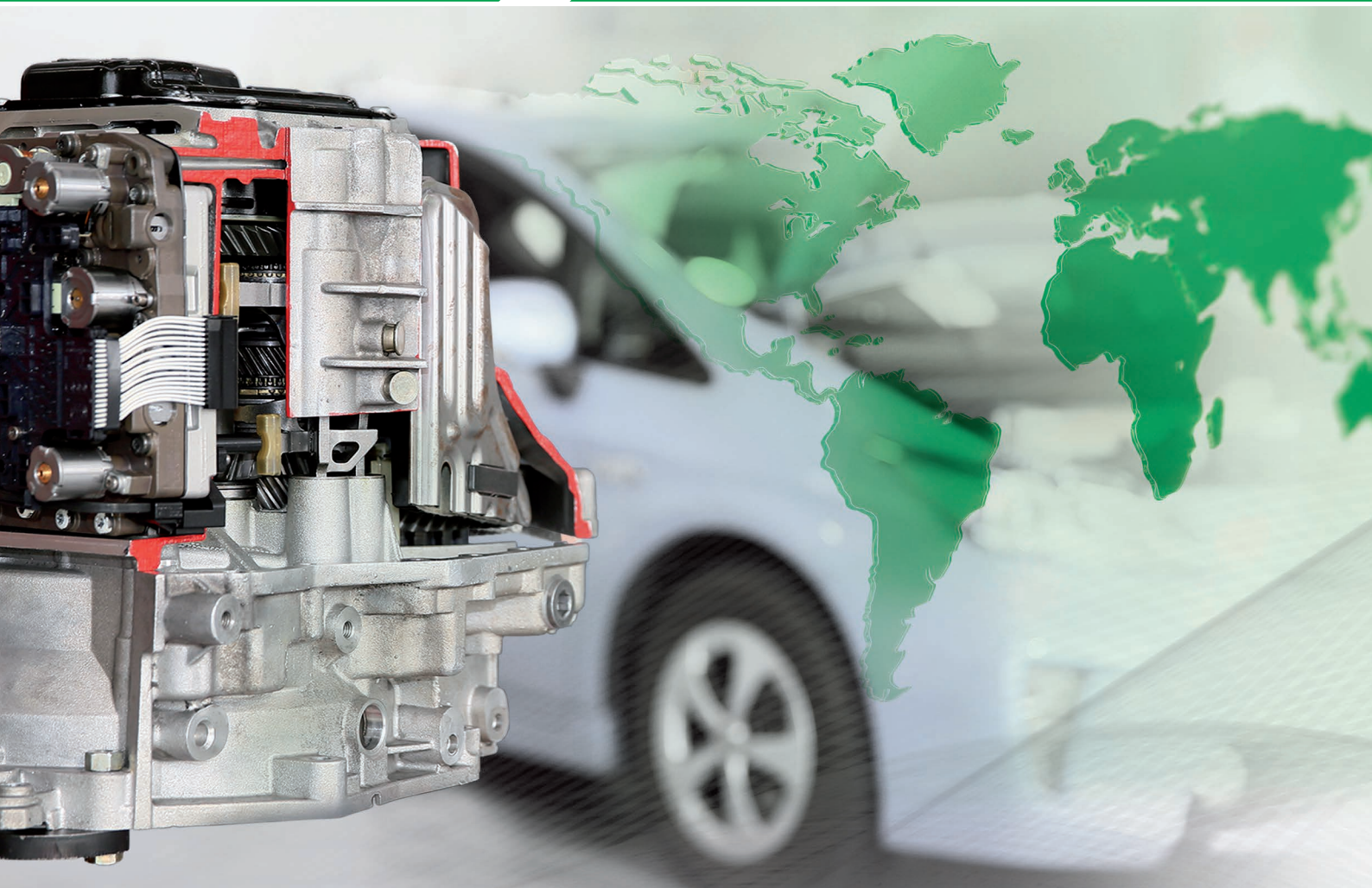


Lucas



Lucas Academy

**Automotive Training
& Technical Assistance**

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lucasdiesel.com

Trust **Lucas**

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LUCAS ACADEMY

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AUTOMOTIVE TECHNICAL TRAINING IN LATEST DIESEL TECHNOLOGIES

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Lucas Academy

EXCELLENCE THROUGH TRAINING & TECHNICAL ASSISTANCE



Lucas Academy is a global company geared towards **training in automotive technology**. Its central office is in East Sussex and has another four additional fully operating locations in the United Kingdom: London, Manchester, Birmingham and Glasgow.

Our objective is to increase and improve the range of services offered to our customers all over the world.

Our state-of-the-art facilities include fully equipped classrooms and portable devices **to provide our courses where our customers require them**. This makes our network an international one that offers personalised and a la carte training programmes.

Customised, in-person, practical and online training, adapted to the needs of each client.

High level training experience

The engine industry is developing at a faster rate now than it ever has throughout its history and the systems and technology in this regard are increasingly complex and demanding. Because of this, we are committed to creating and providing **the most specific and up-to-date courses**, both in person and online.

A large group of professionals who are specialised and qualified in the automotive sector will take care of training for each participant **depending on their needs and personal requirements**.

Lucas Academy offers learning experiences of the highest quality. Our courses have been developed by **qualified instructors with extensive experience in the automotive industry**. Their extensive background and high capacity to share their knowledge in a clear and structured manner ensure an **exceptional training experience**.

Immediate and professional technical support

The customer and the workshop may encounter numerous **technical problems in their daily work** and, to resolve them, they do not always have the necessary knowledge of all car brands.

We can help them by offering them **assistance** and directly providing them with **fast and accurate answers directly**.



AUTOMOTIVE TECHNICAL TRAINING



E-LEARNING



TECHNICAL ASSISTANCE



AUTOMOTIVE TECHNICAL TRAINING IN LATEST DIESEL TECHNOLOGIES

COURSE SUMMARY

Level 1

SPECIALIST IN DIESEL EXHAUST SYSTEMS AND ANTIPOLLUTION

Diesel Exhaust Systems and Antipollution

DES01	Diagnosis of Exhaust Smoke and Antipollution in Diesel
--------------	--

Once all the training courses regarding "Diesel Exhaust Systems and Antipollution" have been completed, you will gain the certificate of Specialist in Diesel Exhaust Systems and Antipollution.



COURSE SUMMARY

Level 2

SPECIALIST IN DIESEL INJECTION SYSTEMS

Diesel Injection			
CRT01	Common Rail Systems: Bosch, Delphi, Siemens-VDO, Denso - Theory	UISDP01	UIS Delphi Systems (comercial vehicles and cars) - Repairing
CRBIO1	Bosch Diesel Injection Common Rail 1st Gen. (CP1) - Repairing	CHH01	Caterpillar HEUI C7/C9 Hydraulic Systems - Repairing
CRBIO2	Bosch Diesel Injection Common Rail 2nd Gen. (CP1H3, CP3) - Repairing	CHH02	Caterpillar HEUI Navistar Hydraulic Systems - Repairing
CRBIO3	Bosch Diesel Injection Common Rail 3rd Gen. (CP4 pumps and piezoelectric injectors) - Repairing	CRCP01	Caterpillar Common Rail Systems C6.6 – C6.4 / Perkins - Repairing
CRSIO1	Siemens-VDO Diesel Injection Common Rail (SID 802) - Repairing	UISDT01	UIS-EUI Detroit Diesel Electronic Systems - Repairing
CRDPIO1	Delphi Diesel Injection Common Rail (FP1, FP3) - Repairing	CCE01	Elect Cummins Electronic Systems - Repairing
CRDSIO1	Denso Diesel Injection Common Rail (HP2, HP3, HP4) - Repairing	Diesel Exhaust Systems and Antipollution	
UISB01	UIS/UPS Bosch Systems (comercial vehicles and cars) - Repairing	DES01	Diagnosis of Exhaust Smoke and Antipollution in Diesel

Once all the training courses regarding “Diesel Injection” and “Diesel Exhaust Systems and Antipollution”; have been completed you will gain the certificate of Specialist in Diesel Injection Systems.



Level 1

SPECIALIST IN DIESEL EXHAUST SYSTEMS AND ANTIPOLLUTION**Diesel Exhaust Systems and Antipollution****16H**
DURATION**DES01****Diagnosis of Exhaust Smoke and Antipollution in Diesel****OBJECTIVES**

Identify the sources of antipollution in the vehicle, composition of the exhaust fumes, antipollution systems and to interpret their values to find out the condition of the engine.

To learn about the methods of measuring exhaust fumes. Recognise the reasons for contaminant emissions in the engine. Diagnosis of breakdowns in an engine according to exhaust fumes analysis.

Level 2

SPECIALIST IN DIESEL INJECTION SYSTEMS**Diesel Injection****16H**
DURATION**CRT01****Common Rail Systems:
Bosch, Delphi, Siemens-VDO, Denso - Theory****OBJECTIVES**

To gain sound knowledge of the correct functioning of Bosch, Delphi, Siemens-VDO and Denso Common Rail systems.

The description and operation of the basic components of each system, assembly and disassembly instructions, verification & checking process.

CRB101**Bosch Diesel Injection Common Rail 1st Gen. (CP1) - Repairing****OBJECTIVES**

To gain sound knowledge for the repairing and testing of Bosch CP1 pumps and CR11 injectors.

The description and operation of the basic components of Bosch CP1 pumps and CR11 injectors; assembly and disassembly instructions, verification and checking process and bench testing.

CRB102**Bosch Diesel Injection Common Rail 2nd Gen. (CP1H3, CP3) - Repairing****OBJECTIVES**

To gain sound knowledge for the repairing and testing of Bosch CP1H3, CP3 pumps and CR12 injectors.

The description and operation of the basic components of Bosch CP1H3, CP3 pumps and CR12 injectors; assembly and disassembly instructions, verification and checking process and bench testing.

Level 2

SPECIALIST IN DIESEL INJECTION SYSTEMS**Diesel Injection****16H**
DURATION**CRBIO3****Bosch Diesel Injection Common Rail 3rd Gen.
(CP4 pumps and piezoelectric injectors) - Repairing****OBJECTIVES**

To gain sound knowledge for the repairing and testing of Bosch CP4 pumps and piezoelectric injectors.

The description and operation of the basic components of Bosch CP4 pumps and piezoelectric injectors; assembly and disassembly instructions, verification and checking process and bench testing.

CRSIO1**Siemens-VDO Diesel Injection Common Rail (SID 802) - Repairing****OBJECTIVES**

To gain sound knowledge for the repairing and testing of Siemens – VDO CR pumps and injectors.

The description and operation of the basic components of Siemens – VDO CR pumps and injectors; assembly and disassembly instructions, verification and checking process and bench testing.

CRDPIO1**Delphi Diesel Injection Common Rail (FP1, FP3) - Repairing****OBJECTIVES**

To gain sound knowledge for the repairing and testing of Delphi CR pumps and injectors.

The description and operation of the basic components of Delphi CR pumps and injectors; assembly and disassembly instructions, verification and checking process and bench testing.

CRDSIO1**Denso Diesel Injection Common Rail (HP2, HP3, HP4) - Repairing****OBJECTIVES**

To gain sound knowledge for the repairing and testing of Denso CR pumps and injectors.

The description and operation of the basic components of Denso CR pumps and injectors; assembly and disassembly instructions, verification and checking process and bench testing.

Level 2

SPECIALIST IN DIESEL INJECTION SYSTEMS**Diesel Injection****16H**
DURATION**UISB01****UIS/UPS Bosch Systems (comercial vehicles and cars) - Repairing****OBJECTIVES**

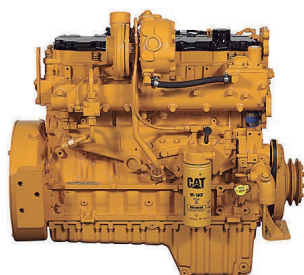
To gain sound knowledge for the repairing and testing of Bosch Unit Injectors.

The description and operation of the basic components of Bosch unit injectors, assembly and disassembly instructions, verification & checking process and bench testing.

UISDP01**UIS Delphi Systems (comercial vehicles and cars) - Repairing****OBJECTIVES**

To gain sound knowledge for the repairing and testing of Delphi Unit Injectors.

The description and operation of the basic components of Delphi unit injectors, assembly and disassembly instructions, verification & checking process and bench testing.

CHH01**Caterpillar HEUI C7/C9 Hydraulic Systems - Repairing****OBJECTIVES**

Acquire sound knowledge to repair, maintain and diagnose the hydraulic injectors installed in the Caterpillar HEUI C7/C9 injection system.

Resolution of problems and operation of the injector components. Electrical diagnosis of the coil and verification of the valve travel.

Calibration of the injector components.

CHH02**Caterpillar HEUI Navistar Hydraulic Systems - Repairing****OBJECTIVES**

Acquire sound knowledge to repair, maintain and diagnose the hydraulic injectors installed in the Caterpillar HEUI Navistar injection system.

Resolution of problems and operation of the injector components.

Electrical diagnosis of the coil and verification of the valve travel.

Calibration of the injector components.

Level 2

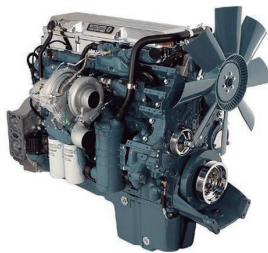
SPECIALIST IN DIESEL INJECTION SYSTEMS**Diesel Injection****16H**
DURATION**CRCP01****Caterpillar Common Rail Systems C6.6 - C6.4 / Perkins - Repairing****OBJECTIVES**

Acquire sound knowledge to repair, maintain and diagnose the injectors involved in Caterpillar Common Rail C6.6 - C6.4 / Perkins injection system.

Resolution of problems and operation of the injector components.

Electrical diagnosis of the coil and verification of the valve travel.

Calibration of the injector components.

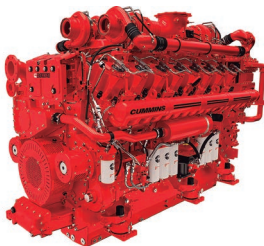
UISDT01**UIS-EUI Detroit Diesel Electronic Systems - Repairing****OBJECTIVES**

Acquire sound knowledge to repair, maintain and diagnose the electronic injectors involved in UIS-EUI Detroit Diesel injection system.

Resolution of problems and operation of the injector components.

Electrical diagnosis of the coil and verification of the valve travel.

Calibration of the injector components.

CCE01**Celect Cummins Electronic Systems - Repairing****OBJECTIVES**

Acquire sound knowledge to repair, maintain and diagnose the electronic injectors involved in the Celect Cummins injection system.

Resolution of problems and operation of the injector components.

Electrical diagnosis of the coil. Calibration of the injector components.

Diesel Exhaust Systems and Antipollution**16H**
DURATION**DES01****Diagnosis of Exhaust Smoke and Antipollution in Diesel****OBJECTIVES**

Identify the sources of antipollution in the vehicle, composition of the exhaust fumes, antipollution systems and interpret their values to find out about the engine's condition.

To learn about the methods of measuring exhaust fumes. Recognise the reasons for contaminant emissions in the engine. Diagnosis of breakdowns in an engine according to exhaust fumes analysis.



E-LEARNING

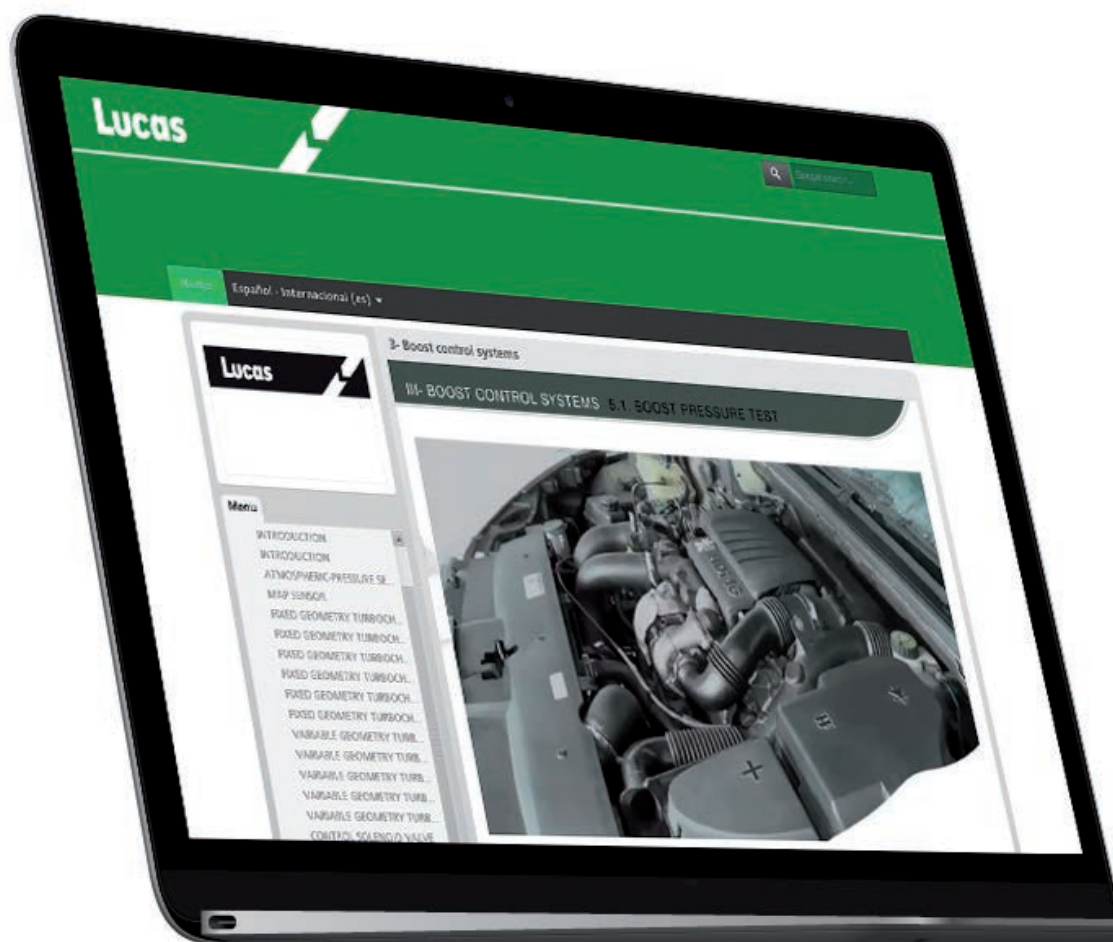
Lucas Academy offers professionals learning experiences of the highest quality, featuring the most innovative content. They therefore reflect not only **where the automotive industry stands at the moment** but also **where it will be in the future**.

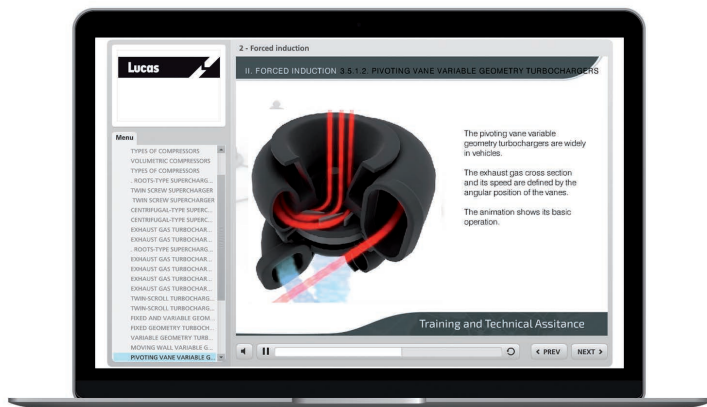
All of our e-Learning courses have been designed and developed **by expert instructors** with **extensive experience in the automotive industry**.

Their detailed expertise in the practical environment and their ability to share their knowledge in structured and up-to-date programmes ensures a fruitful and satisfactory training experience.

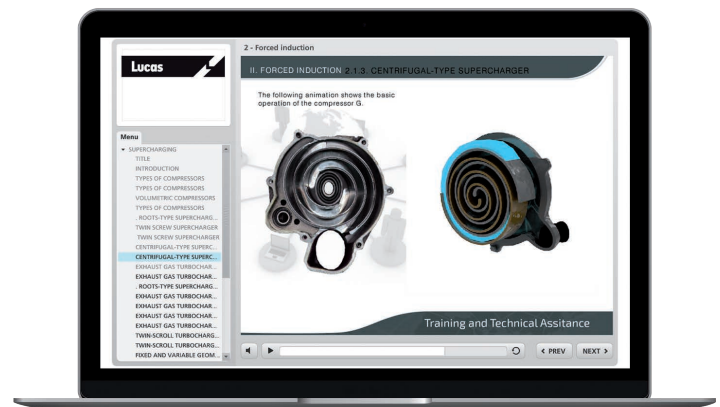
We have **state of the art platforms and resources** to adequately complete our online training, with the help of videos, 3D infographs and cutting edge multimedia material.

Lucas Academy can provide its e-Learning training around the world, anywhere, anytime.

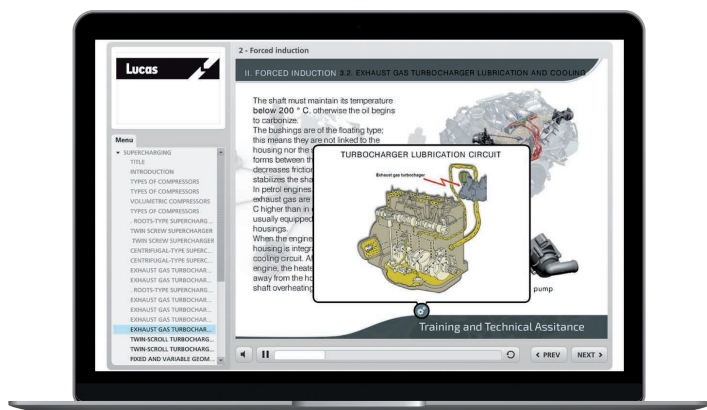




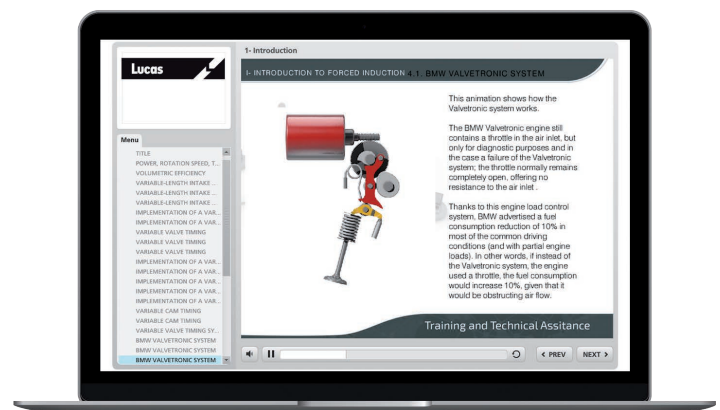
3D multimedia videos



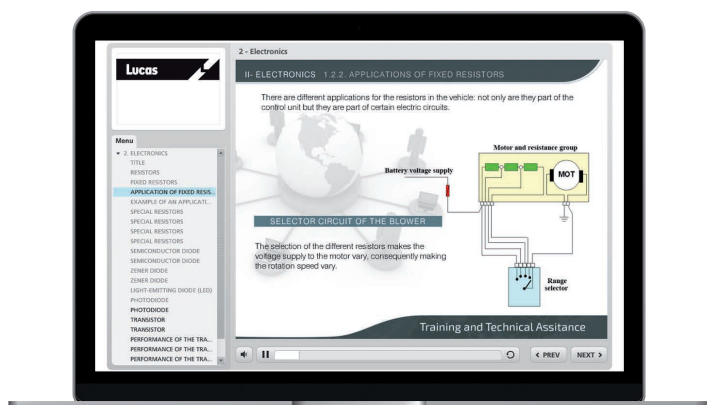
Fully explanation of the functioning of each component



Detailed high definition pictures



Motion graphics & visual effects



Interactive diagrams

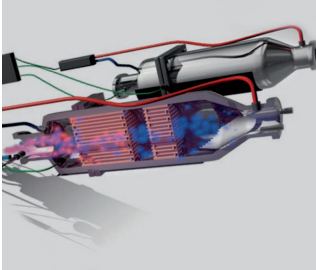
We have the latest generation platform in order to assist online training using videos and 3D infographics. We can access anywhere around the world.

DBCRO1**Diagnosis of Bosch's Common Rail Systems****OBJECTIVES**

To have detailed knowledge of Bosch's electronic Common Rail injection system. Interpreting the functioning of the systems in order to diagnose any issues using the multimeter, oscilloscope and pressure tester.

Compare the functioning among different generations of injection systems. Differences between pumps, injectors and electrical components. Most common breakdowns among different injection systems. Diagnosis of high and low fuel pressure circuits.



DMA502**Diagnosis and Maintenance of Diesel Antipollution Systems****OBJECTIVES**

To find out about the elements that make up the diesel antipollution systems, the procedures for diagnosis, maintenance and repair diesel engines.

Methods for reducing polluting gases. Fault diagnosis of the elements for reducing of polluting gases before the combustion chamber (EGR, mixture control, Lambda probe, catalysts, FAP, DPF, SCR). Checking the wear points and common failures.





TECHNICAL ASSISTANCE

HANDLING OF TECHNICAL SUPPORT



The client and the workshop may encounter many technical problems but do not always have the necessary knowledge about each of the systems of all of the cars in the market.

We can assist them by providing that information or directly offering them an answer as to how to resolve the problem.

By **calling our Technical Assistance Department by telephone** and the process could be handled via two different ways:

TROUBLESHOOTING

Comprehensive technical advice for problem resolution.

DATABASE

Provision of technical information.



+450

incoming calls answered every day



99%

of the calls answered in the first call



93%

of the problems posed solved



2,000

helplines managed

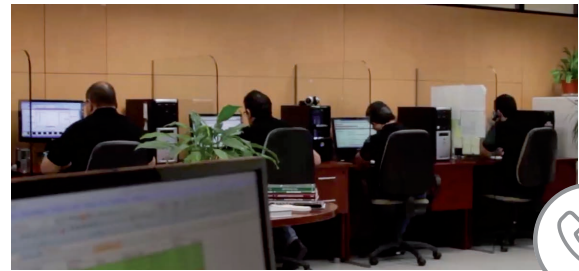


17

technical experts available with over 10 years of experience in the automotive sector

HELPLINE

HANDLING OF TECHNICAL INCIDENTS



1. Technical issue

Customer calls the technical support helpline

2. Incident analysis

Detailed information is collected to diagnose of the problem

Troubleshooting



45,000

Cases solved



EXPERIENCE

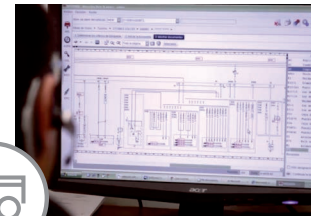
Technicians for multibrand garages and dealerships



QUICK

Solutions

Database



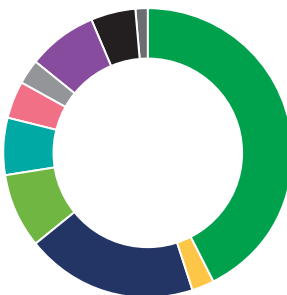
Procedures

- Assembly
- Dismantling
- Reset service
- Maintenance plan
- Localisation of components
- Bulletins

Data

- Schemes
- Tightening torques
- Repair times

% Technical consultations



- 47.3% Fuel systems
- 2.8% AC systems
- 21.3% Guided diagnosis
- 9.2% EOBD
- 7.1% Repair times
- 4.5% Hybrid
- 3.2% LPG
- 8.7% Tightening torques
- 5.3% Electric schemes
- 1.5% Fuel reserves



E-mail



Phone

TROUBLESHOOTING

Case study 1

MERCEDES CLASSE B 180 CDI



1. Problem

The oil level/oil pressure warning light is illuminated.



2. Workshop

Check the entire system lubrication (oil pump, filter...) and everything is in order, but the problem persists.



3. Technical Analysis

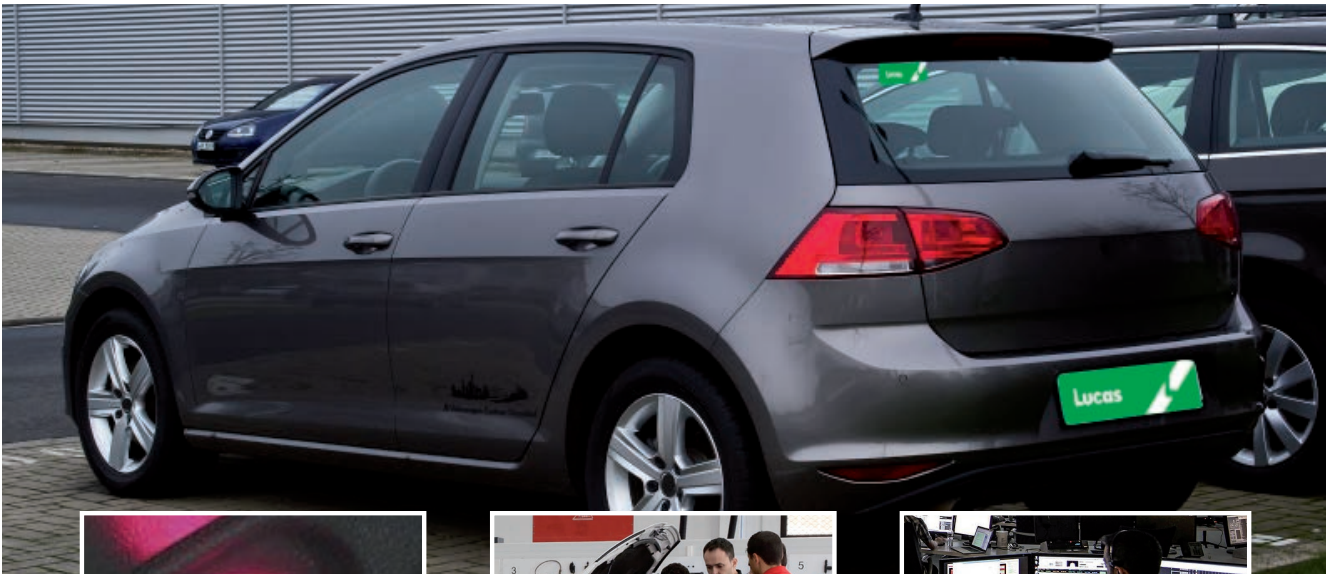
Analysis and collection of information by technical support.



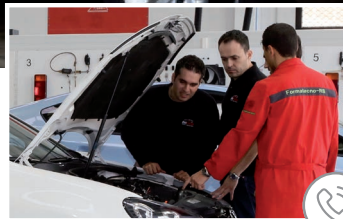
TECHNICAL SOLUTION

Check the particulate filter for correct regeneration operation as it is not automatically being done and the amount of diesel used for this purpose does not burn completely and ends up contaminating the engine oil. Perform a test on the DPF system and carry out a forced regeneration. Recheck values and everything should be in order.

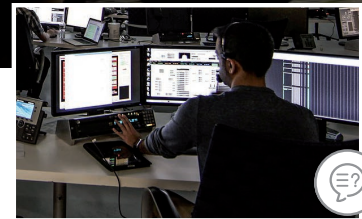
Case study 2

VOLKSWAGEN GOLF IV TDI 130**1. Problem**

The oil light is illuminated when the engine is running.

**2. Workshop**

Check the oil level and everything is correct.

**3. Technical Analysis**

Analysis and collection of information by technical support.

**TECHNICAL SOLUTION**

Effectively, the oil level is correct. Our technical information indicates that the bonnet switch is at fault, which is normally on the right side. You are prompted to check for continuity of the switch and the switch was discovered to be causing this error.

DATABASE

Our database is an online tool that provides quick and easy access to a wide and comprehensive range of technical information.

Comprehensive coverage

Data provided directly by the manufacturers themselves. (80% of information is obtained by vehicle manufacturers).

Time-saving

Interactive illustrations of the location of components enable us to obtain the accessible information quickly and easily.

It saves recent searches to make it easy to switch from one procedure to another and to be able to restart the work from the point you left off.

It saves you time searching by offering access to all of the required technical information on a single screen.

Increased business performance

Designed as an aid to assist professionals with the workflow in the workshop, therefore reducing down time. Less time spent on searches equals an increase in efficiency.

Generate revision checklists and professional quotes. Attend to more vehicles and increase the level of customer satisfaction.

Multimedia section

Access to the videos about the product, which show how Autodata works: from access to the best review programmes, to the use of interactive images to locate the location of each component.



29,000

vehicle models worldwide



+85,000

schemes and illustrations

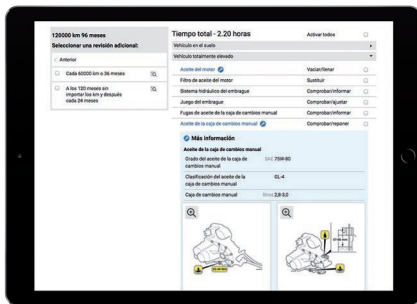


500,000

step-by-step procedures



KEY FEATURES



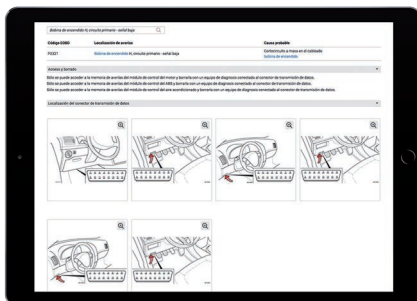
Review guidelines with built-in data:
All technical data and illustrations are incorporated directly to save time.



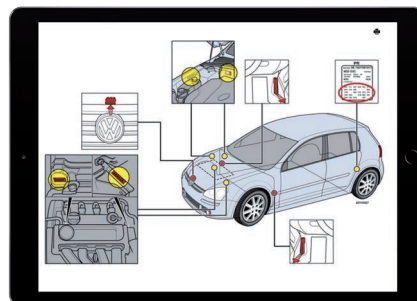
Interactive pages components location
Look for components, see images and access information quickly and easily.



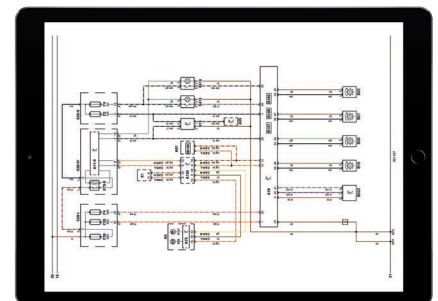
Panel of recent activity:
Easily switch between different cars to keep the workflow efficient.



Search fault codes:
Search by coder or name of component to instantly locate the information and solutions to the corresponding components.



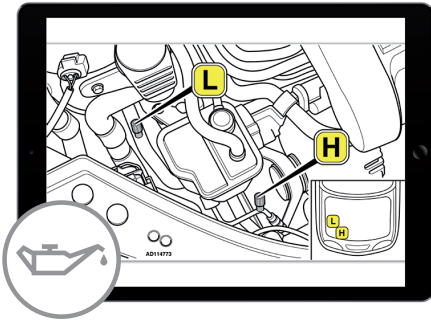
Illustrations of the components:
The images we send are more detailed for a more informative experience. Component locations and indicated illustrations.



Wiring diagrams:
Detailed wiring diagrams showing the path in which the circuit is laid out.

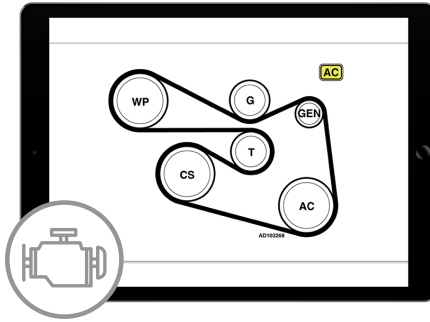
DATABASE

TECHNICAL INFORMATION



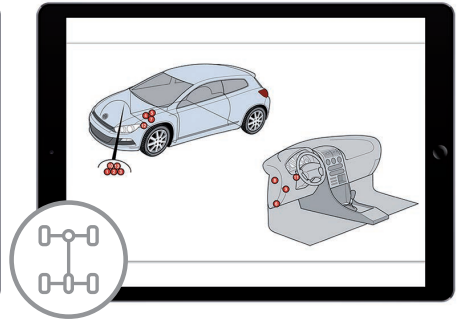
Review

- ▶ Illustrations of programs
- ▶ Review
- ▶ Interval indicator
- ▶ Brake check
- ▶ Maintenance of air conditioning



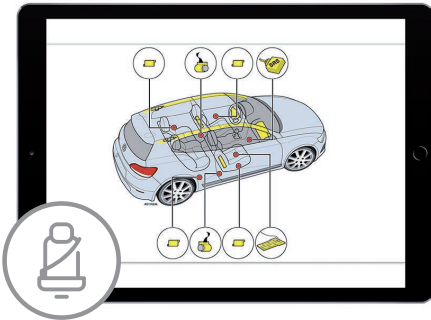
Drivetrain

- ▶ Engine management
- ▶ Command tree(s)
- ▶ Auxiliary and cam drive bells
- ▶ Clutches



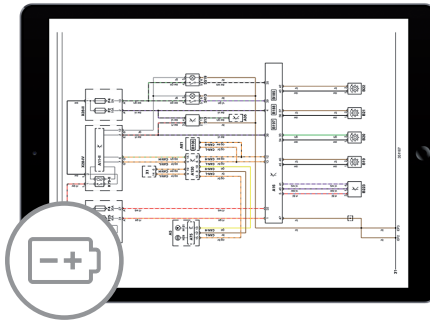
Chassis

- ▶ Antilock braking system
- ▶ Wheel alignment
- ▶ Tyre pressures



Body and passenger compartment

- ▶ Airbags
- ▶ A/C air conditioning



Electrical wiring schematics

- ▶ Disconnection and reconnection of battery
- ▶ Electric schemes
- ▶ Faulty codes
- ▶ Location of electrical components



General information

- ▶ Technical specification
- ▶ Repair times
- ▶ Repair information
- ▶ Location of the rack number
- ▶ Warning symbols

NOTES

[illegible]

Lined writing area with horizontal lines.

NOTES

This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal grey lines across its entire width, providing a guide for writing. The paper itself is a clean, off-white color. There are no margins, text, or other markings present on the page.

EUROPE

UK - Unit 8 Mainstream Way - 47 Mainstream Way
B7 4SN - Saltley - Birmingham

SPAIN - Pol. Ind. Morea Sur, 59 - 31191 Beriain - Navarre

ITALY - Via F. Filzi, 15 - 20032 Cormano - Milan

NORTH AMERICA

USA - Southfield Town Center - 1000 Town Center - 7th floor
48075 Southfield - Detroit - Michigan

CENTRAL AMERICA

PANAMA - Boulevard Costa del Este
Financial Park Tower - Planta 20 - Costa del Este - Panama City

SOUTH AMERICA

BRAZIL - E-Tower - 35th floor - Funchal, 418 - Vila Olimpia
04551-060 - São Paulo - SP