

# STARGAS FAMILY

Smoke and gas analysis



Follow the red car





## THE IMPORTANCE OF MOTOR VEHICLES POLLUTION

Carbon dioxide (CO<sub>2</sub>) is the gas which most causes the greenhouse effect generated by man. It is also the main gas emitted by more than 700 million vehicles circulating in the world, contributing each year to 20% of the total CO<sub>2</sub> released in the atmosphere. Together with other emissions produced by motor vehicles, which are carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), unburned hydrocarbons (e.g. HC), and fine dust, the emissions have for some time been subject to legal standards and regulations in all the countries of the world. The current anti-pollution regulations induce the automobile manufacturers to constantly work at improving motor technology, with a prevailing use of electric diagnostics on board (OBD, EOBD).



## THE IMPORTANCE OF AIR POLLUTION CONTROL

Apart from encouraging car demolition, by principally promoting correct vehicle maintenance significant results can be obtained. The harmful emissions level is in fact very much higher for cars that are not serviced regularly. The importance of the maintenance is strategic, because it determines the entire vehicle fleet emission levels. For fighting the battle against pollution, it is particularly important to regularly offer the car repairers the chance to keep an eye on the latest available advanced technology, so as to best carry out their work. (an entire article taken from "Osservatorio Autopromotec")

# STARGAS FAMILY



**STARGAS 898PLUS**  
Innovation and advanced technology for a quality job



**STARGAS 898**  
The essential workshop tool



**STARGAS 898LIGHT**  
Global diagnostics system specific for gas analysis



**STARGAS 898BOX**  
Stargas analysis precision available at a click of a button



**STARGAS 898ONE**  
The semplicity of high precision pure gas analysis

**STARGAS**  
GLOBAL DIAGNOSTIC SYSTEM  
**898**

# STARGAS 898PLUS

## STARGAS 898PLUS · INNOVATION AND ADVANCED TECHNOLOGY FOR A QUALITY JOB

Stargas 898PLUS easily switches from the exhaust gas test, measuring CO, CO<sub>2</sub>, HC, O<sub>2</sub>, NO<sub>x</sub> (optional), Lambda, RPM and engine temperature, smoke diesel engine test to Autodiagnostic, Oscilloscope, Technical Database and maximum speed test management for motorbike.

### BENEFITS

- New Electronics with more memory capacity and speed
- LCD TFT color graphic high lightness display
- Highvoltage oscilloscope
- Ohmmeter
- RPM counter from battery or lighter
- RPM Antenna kit to pick up remote for Petrol and Common Rail Engine
- USB-HOST (printer) or USB-DEVICE (PC)

### COMPOSITION

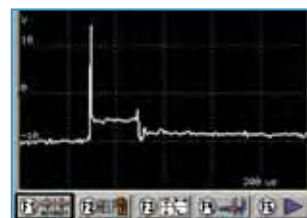
- Stargas 898PLUS
- Low and High Voltage Oscilloscope composed by: Low Voltage clamp-on cables
- Ohmmeter kit composed by cables clamp-on ammeter, test prod, alligator clip
- RPM Antenna kit (flexible and telescopic) to pick-up remote
- RPM Cable from lighter
- Cable 3 in 1 for Stargas supply from batteries, RPM taking from batteries and supply autodiagnostic module 5041



Comparison between 898 STN display and 898 PLUS TFT display.



- Gas analyzer
- Smokemeter
- Autodiagnostic
- EOBD
- Oscilloscope-Diagnostic
- EcuDat@car



## STARGAS 898 · THE ESSENTIAL WORKSHOP TOOL

Stargas 898 is an analyzer which works both as measuring unit and as multi-operative station without being connected to a PC. As a matter of fact its central unit easily switches from the exhaust gas test to the autodiagnosis oscilloscope functions and technical database. Stargas can also be remotely controlled through an alphanumeric keyboard with infrared rays. Stargas 898 is the first exhaust gas analyzer being OIML Class 0 type approved. The applied technology makes it already fit for the possible future changes that could be introduced by the European regulation.

Stargas can carry out the following measurements: CO, CO<sub>2</sub>, HC, O<sub>2</sub>, NO<sub>x</sub> (optional), Lambda, RPM, Engine Temperature; Integrated RPM measuring from the battery; Environmental condition measurement: temperature, atmospheric pressure, relative humidity, Lambda Test (1V/5V). When connected to the smokes measurement chamber, Stargas 898 can carry out opacity measurements for diesel engines. The connection with the the ECUreader® enables Stargas to dialogue with modern vehicles electronic central units, by verifying the functioning of the devices that are managed by the ECU. For instance: ignition, injection, ABS, air-bag, intelligent suspensions, etc.



Stargas 898 is available also on the High Tech version.  
For a full high technology garage!

**898-HT** Stargas Hi-Tech

**940-HT** Multifunctional trolley Hi-Tech version

**0115307HT** Monitor desk Hi-Tech version

**495/02HT** Smokemeter Hi-Tech version

**Hi-Tech**

# STARGAS 898LIGHT



## STARGAS 898LIGHT · GLOBAL DIAGNOSTICS SYSTEM SPECIFIC FOR GAS ANALYSIS

Stargas 898LIGHT was conceived as a global diagnostics system featuring a built-in exhaust gas analyser for O OILM type-approved petrol engines. It is a high technology unit able to manage a smoke analysis chamber for diesel engines model 495/02, oscilloscope, ECUreader®/EOBD and EcuDat@car. Thanks to an upgrade kit (SL51160) the light version may be further improved, giving it the same functions and features as the Stargas 898 model for petrol engines.



## 898 GAS ANALYSIS UPGRADE KIT

**SL51160/D** German approval

**SL51160/GB** UK approval

**SL51160/F** French approval

**SL51160/CH** Swiss approval



# STARGAS 898BOX · STARGAS 898ONE



## STARGAS 898BOX · STARGAS ANALYSIS PRECISION AVAILABLE AT A CLICK OF A BUTTON

Exhaust gas analyser “Stargas BOX” to be used with VISA Win or PC:

- Software Windows
- Measurement CO, CO<sub>2</sub>, HC, O<sub>2</sub>, Lambda, NO<sub>x</sub> (opt.)
- RPM with battery or antenna kit (opt.)
- Environment parameters automatically
- Lambda Test 0 ÷ 5V
- OIML Class 0

| MEASURE             |                 |                 |      |    |    |
|---------------------|-----------------|-----------------|------|----|----|
| RPM                 | CO              | CO <sub>2</sub> | CO   |    |    |
| 3552                | 0.66            | 5.90            |      |    |    |
| Temp.               | HC              | O <sub>2</sub>  | 0.85 |    |    |
| 81                  | 159             |                 |      |    |    |
| Lambda              | CO <sub>x</sub> | NO <sub>x</sub> |      |    |    |
| 1.029               | --              |                 |      |    |    |
| MEASURE IN PROGRESS |                 |                 |      |    |    |
| Exp.                | F1              | F2              | F3   | F4 | F5 |

STARGAS 898 BOX



## STARGAS 898ONE · THE SIMPLICITY OF HIGH PRECISION PURE GAS ANALYSIS

Stargas ONE is a measuring unit and allows maintenance and control of car, motorcycle and truck exhaust gas and smoke (joint with smokemeter). It's a useful instrument for verifying the health of engines and keeping them in good conditions. It also can be used in the movable stations or for road tests. Stargas ONE easily switches from different exhaust gas tests, measuring CO, CO<sub>2</sub>, HC, O<sub>2</sub>, NO<sub>x</sub> (optional) and smoke diesel engine. Stargas ONE thanks to his LCD display at high lightness, allows a perfect view in any situation and from any viewing position. Its limited weight and size and the possibility of being battery powered, allow the instrument to be used in the movable stations or for road tests.

Stargas ONE is a user-friendly product suitable for satisfying all users whose requests are linked to pure gas analysis without losing high performance and precision. A wide assortment of accessories and optional make the Stargas ONE a versatile tool able to be upgraded with more features so to adapt it to all the requirements different users could have. It can be provided with a built-in printer for realizing on paper database of the analysis results.

# STARGAS ACCESSORIES



## ACCESSORIES INCLUDED

| Cod.    | Description                          | 898 | 898PLUS | 898LIGHT | 898ONE | 898BOX |
|---------|--------------------------------------|-----|---------|----------|--------|--------|
| SL51003 | ANALYZER COMPLETE GAS PROBE          | x   | x       |          | x      | x      |
| 3119066 | MT. 3 MAINS CABLE SCHUKO PLUG        | x   | x       | x        |        | x      |
| 1103004 | ZENITH TUBE 5X8 PVC8000 030 4405/1,5 | x   | x       |          | x      | x      |
| SL11001 | GAS INTAKE PIPE                      | x   | x       |          | x      | x      |
| SL51043 | SPARE FILTERS SET                    | x   | x       |          |        | x      |
| 5123008 | EXTERNAL PRE-FILTER (INGAS HOSES)    | x   | x       |          |        | x      |
| 5607062 | THERMIC PRINTER PAPER                | x   | x       | x        |        |        |
| 5119031 | FUN FILTER 60 X 60 MM                | x   | x       | x        |        | x      |
| SL21409 | SHUNT CABLE                          | x   | x       |          |        | x      |
| 3119064 | RED WIRE CRIMPING CLAMP              | x   | x       |          |        | x      |
| SL21771 | WIRE TEST CLAMP LAMBDA CABLE 898     | x   | x       |          |        | x      |
| 2303155 | GROUND CABLE                         | x   | x       | x        | x      | x      |
| SL51080 | TEMPERATURE PROBE                    | x   | x       |          |        | x      |
| 2303153 | EXTENDED LAMBDA PROBE CABLE          | x   | x       |          |        | x      |
| 2303152 | BATTERY SUPPLY CABLE 898             | x   | x       | x        | x      |        |
| 2303154 | RPM BATTERY CABLE                    | x   | x       | x        | x      | x      |
| 2303159 | RPM CIGAR LIGHTER ADAPTER            |     | x       |          |        |        |
| 2303171 | 898 CIGARETTE LIGHTER PWR SUPPLY     |     | x       |          |        |        |
| 2303240 | 898/PC SERIAL CONNECTION CABLE       |     |         |          |        | x      |
| SL51116 | REVOLVING ANTENNA                    |     | x       |          |        |        |
| SL51117 | FLEXIBLE ANTENNA 0,6 METRES          |     | x       |          |        |        |
| SL06034 | AMMETER CLAMP                        |     | x       |          |        |        |
| 2103029 | OSCILLOSCOPE CABLE FOR 898           |     | x       |          |        |        |
| SL51065 | ALLIGATOR CLAMP WITH RED SHEATH      |     | x       |          |        |        |
| 3125007 | RED TEST (FOR SCOPE)                 |     | x       |          |        |        |
| 2303315 | OSCILLOSCOPE MASS CABLE DIAM. 4      |     | x       |          |        |        |
| 3119155 | CAPACITIVE CLAMP FOR STARGAS         |     | x       |          |        |        |
| 3125008 | BLACK TEST (FOR SCOPE)               |     | x       |          |        |        |



## SMOKE ANALYSIS FUNCTION



**495/01**  
SMOKEMETER



**495/02**  
SMOKEMETER FOR 940  
TROLLEY

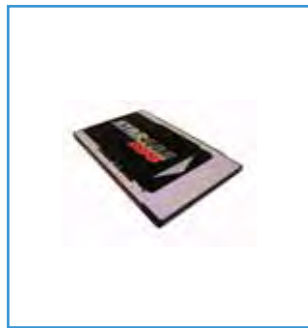


**495/02**  
SMOKEMETER VERSION  
HIGH TECH FOR 940  
TROLLEY

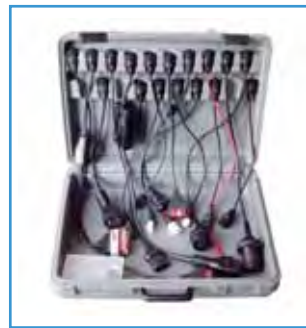
## DIAGNOSTIC FUNCTION



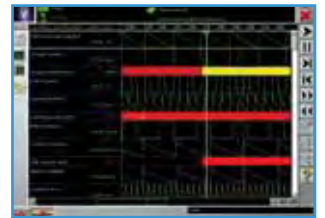
**5041**  
SMART MODULE



**3161E**  
COMPACT FLASH  
WITH ECUREADER  
SOFTWARE



**SL31174F-31175**  
DIAGNOSTIC  
CABLES KIT



**FR50**  
FLIGHT DATA  
RECORDER KIT

## VISA PLANET & WIRELESS KIT



**37051G**  
VISA PLANET GAS  
ANALYSIS SW FOR  
WINDOWS

**37051S**  
VISA PLANET SMOKE  
ANALYSIS SW FOR  
WINDOWS



**BT80** BLUETOOTH SW KIT MASTER KEY

**BT898** BLUETOOTH KIT FOR 898/PC CONNECTION

**BT2035** BLUETOOTH KIT FOR 2035/PC CONNECTION

**BT495** BLUETOOTH KIT FOR 495/PC CONNECTION



**SL31205/PLUS**  
SCOPE / MULTIMETER  
KIT FOR 898  
PLUS

# TECHNICAL SPECIFICATIONS

| Technical specifications | 898   | 898PLUS  | 898LIGHT   |
|--------------------------|---|--|--|
| Main power supply        | Mains 90 ÷ 270 V, Battery 10 ÷ 16 V   | Mains 90 ÷ 270 V, Battery 10 ÷ 16 V  | Mains 90 ÷ 270 V, Battery 10 ÷ 16 V  |
| Measuring range          | CO 0 ÷ 15,000 % Vol (res. 0,001)<br>CO <sub>2</sub> 0 ÷ 20,00 % Vol (res. 0,01)<br>HC 0 ÷ 30000 ppm Vol (res. 1)<br>O <sub>2</sub> 0 ÷ 25,00 % Vol (res. 0,01)<br>NO <sub>x</sub> 0 ÷ 5000 % Vol (res. 1 - optional)<br>Lambda 0,5 ÷ 2,000 (res. 0,001) | CO 0 ÷ 15,000 % Vol (res. 0,001)<br>CO <sub>2</sub> 0 ÷ 20,00 % Vol (res. 0,01)<br>HC 0 ÷ 30000 ppm Vol (res.1)<br>O <sub>2</sub> 0 ÷ 25,00 % Vol. (res.0.01)<br>NO <sub>x</sub> 0 ÷ 5000 % Vol (res. 1 - optional)<br>Lambda 0,5 ÷ 2,000 (res. 0,001) | Automatic measurement of:<br>Ambient temp. -40 ÷ +60 (res.1)<br>Ambient press. 750 ÷ 1060 mbar (res.1)<br>Ambient rel. humidity 0÷100% (res.1) |
| Induction RPM counter    | 0 ÷ 10000rpm (res.10) - battery conn<br>0 ÷ 20000rpm (res.10) - induction clamp<br>0 ÷ 15000rpm (res.10) - antenna system   | 0 ÷ 10000rpm (res.10) - battery conn<br>0 ÷ 20000rpm (res.10) - induction clamp<br>0 ÷ 15000rpm (res.10) - antenna system  | 0 ÷ 10000rpm (res.10) - battery conn<br>0 ÷ 20000rpm (res.10) - induction clamp<br>0 ÷ 15000rpm (res.10) - antenna system                      |
| Electronic Lambda test   | Yes   | Yes  | Yes*   |
| Operating temperature    | +5° ÷ +40 °C  | +5° ÷ +40 °C   | +5° ÷ +40 °C   |
| Measuring gas induction  | 10 l/m (approx)   | 10 l/m (approx)  | 10 l/m (approx)*   |
| Response time            | <10 sec (probe length 3mt)  | <10 sec (probe length 3mt)   | <10 sec (probe length 3mt)*  |
| Zero setting             | Electronic and automatic  | Electronic and automatic   | Electronic and automatic*  |
| Condensate drain         | Continuous and automatic  | Continuous and automatic   | Continuous and automatic*  |
| Warm up time             | 60 sec. maximum   | 60 sec. maximum  | 60 sec. maximum*   |
| Serial output            | COM1-COM2 for autodiag interface<br>SMOKEMETER<br>RS232/PC - RS485<br>USB   | COM1-COM2 for autodiag interface<br>SMOKEMETER<br>RS232/PC - RS485<br>USB  | COM1-COM2 for autodiag interface<br>SMOKEMETER<br>RS232/PC - RS485<br>USB  |
| Printer                  | 24 column   | 24 column  | 24 column  |
| Dimension                | 400 x 180 x 450 mm  | 400 x 180 x 450 mm   | 400 x 180 x 450mm  |
| Weight                   | 8,6 kg  | 8,6 kg   | 8,6 kg (approx)  |
| Technical specification  | 898ONE  | 898BOX   | 495/01 - 495/02  |
| Main power supply        | Mains 90 ÷ 270 V, Battery 10 ÷ 16 V   | Mains 90 ÷ 270 V, Battery 10 ÷ 16 V  | 12-0-12V   |
| Measuring range          | CO 0 ÷ 15,000 % Vol (res. 0,001)<br>CO <sub>2</sub> 0 ÷ 20,00 % Vol (res. 0,01)<br>HC 0 ÷ 30000 ppm Vol (res. 1)<br>O <sub>2</sub> 0 ÷ 25,00 % Vol (res. 0,01)<br>NO <sub>x</sub> 0 ÷ 5000 % Vol (res. 1 - optional)<br>Lambda 0,5 ÷ 2,000 (res. 0,001) | CO 0 ÷ 15,000 % Vol (res. 0,001)<br>CO <sub>2</sub> 0 ÷ 20,00 % Vol (res. 0,01)<br>HC 0 ÷ 30000 ppm Vol (res.1)<br>O <sub>2</sub> 0 ÷ 25,00 % Vol. (res.0.01)<br>NO <sub>x</sub> 0 ÷ 5000 % Vol (res. 1 - optional)<br>Lambda 0,5 ÷ 2,000 (res. 0,001) | 0 ÷ 99,9 % (res.0.1) opacity<br>0 ÷ 9,99 m-1 (res. 0.01)   |
| Induction RPM counter    | 0 ÷ 10000rpm (res.10) - battery conn<br>0 ÷ 20000rpm (res.10) - induction clamp<br>0 ÷ 15000rpm (res.10) - antenna system   | 0 ÷ 10000rpm (res.10) - battery conn<br>0 ÷ 20000rpm (res.10) - induction clamp<br>0 ÷ 15000rpm (res.10) - antenna system  | 0 ÷ 9990rpm (res.10)   |
| Electronic Lambda test   | No  | Yes  | -  |
| Operating temperature    | +5° ÷ +40 °C  | +5° ÷ +40 °C   | +5° ÷ +40 °C   |
| Measuring gas induction  | 10 l/m (approx)   | 10 l/m (approx)  | Measuring chamber temperature  |
| Response time            | <10sec (probe length 3mt)   | <10 sec (probe length 3mt)   | -  |
| Zero setting             | Electronic and automatic  | Electronic and automatic   | Automatic  |
| Condensate drain         | Continuous and automatic  | Continuous and automatic   | -  |
| Warm up time             | 40 sec. maximum   | 60 sec. maximum  | 5 minutes maximum  |
| Serial output            | SMOKEMETER<br>RS232/PC - RS485<br>USB   | COM1-COM2 for autodiag interface<br>SMOKEMETER<br>RS232/PC - RS485<br>USB  | RS232  |
| Printer                  | optional  | -  | -  |
| Dimension in mm          | 400 x 180 x 450 mm  | 400 x 180 x 450 mm   | 465 x 160 x 190 mm (495/01)<br>470 x 230 x 220 mm (495/02)   |
| Weight                   | 8,6 kg (approx)   | 8,6 kg   | Approx 10 kg (495/01) - 6 kg (495/02)  |

\* Function available with 898 gas analysis upgrade kits (look at page 6).

## SPX - Where Ideas Meet Industry

SPX makes things that make the world work. Our family of companies engineer custom solutions for our customers to meet their needs. We are particularly focused on developing products to meet the growing worldwide demand for energy and power. SPX has an innovative product portfolio, containing many environmentally friendly products, such as cooling systems for all types of power plants throughout the world; custom engineered pumps, valves and mixers that assist a variety of flow processes including oil and gas exploration, distribution and refinement; handheld diagnostic tools that aid in vehicle maintenance and repair, and power transformers that regulate voltage for electrical transmission and distribution by utility companies.

SPX delivers ingenious solutions that meet the demands of a growing global infrastructure. By operating better... Thinking harder... And competing and winning in markets around the world...

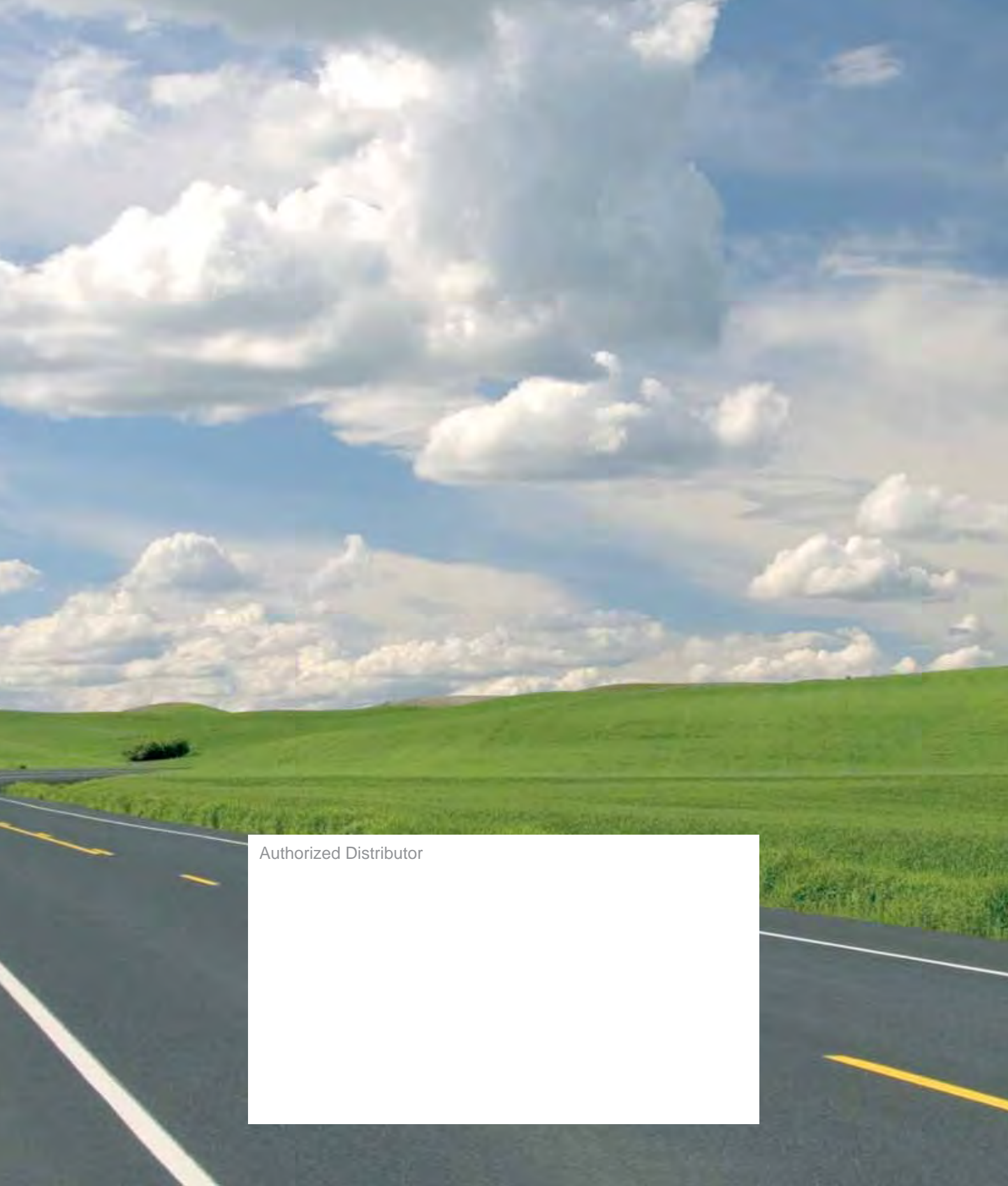
SPX Corporation is a global multi-industry manufacturing leader committed to operational excellence and execution. Operating in more than 35 countries with approximately 17,000 employees, SPX is a provider of Flow Technology, Test and Measurement, Thermal Equipment and Services, and Industrial Products and Services.

## Tecnotest - An SPX Brand

Tecnotest was established in 1982, as a company specializing in the planning and manufacturing of instruments and services for the maintenance of cars, motorbikes and heavy vehicles. In 1998, it became a division of SPX Italia S.r.l., to be precise of SPX Service Solutions - one of the four business units of SPX Corporation. SPX Service Solutions is involved in the planning, manufacturing and marketing of specialised automotive service equipment, portable diagnostics systems and tools for maintenance, inspection and measuring systems.

SPX Service Solutions consists of 5.000 employees spread across 15 countries. Tecnotest is made up of 150 professionals including clerks and operators. For any further information visit the internet site Tecnotest: [www.tecnotest.com](http://www.tecnotest.com)





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