DYNtest

Systems for Emission Control and Monitoring

ControlBox

FBC Dosing  Remote Control  HC dosing  Off-Road PanelBox

- Suitable for all On-Road and Off-Road applications
- Proofed worldwide
- OEM solution
- Robust technology
- Fast and simple installation
- Environmentally friendly
- Can be used with all makes of engines and exhaust systems
- Dependable bus system with tried and tested components

Systems for a cleaner future
Dear customers, dear reader,

“Man is not the product of his environment – the environment is the product of man”.

Benjamin Disraeli realized this at the beginning of the 19th century. Protecting the environment and using natural resources responsibly is something that concerns us all.

Politicians have learned to change their way of thinking and the energy sector is also going through radical changes. CPK Automotive is not only going along with this development but is the decisive step ahead. After all, the continued development of innovative technologies to reduce diesel emissions actively contributes to the preservation of our environment. Our electronic systems guarantee the success of the exhaust gas after-treatment systems used.

The result of our research and development are distinctive products that are highly innovative, user-friendly and of the highest quality and reliability. The well thought-out modular DYNTEST system, with the ControlBox at its very heart, offers the right components for every customer requirement.

The exceptional quality of our products is reflected by certifications such as VERT, CARB and ISO.

Finally, I would like to quote Richard von Weizsäcker: “Let us do everything we can to leave the next generation - the children of today - a world which not only gives them the space they need to live in, but also the environment which nurtures life and makes it worth living.”

With this in mind, I look forward to working with you.
Everybody’s talking about saving the environment. We’re doing something about it. Our company, which was established in 1966, has for many years specialized in the development of environmental solutions, chiefly in the field of automotive technology. Today, our main line of business is the development and production of systems for monitoring and controlling the after treatment of engine exhaust gases.

Our best-known product is the DYNTEST system, which is in demand all over the world. It can be fitted to trucks, buses, construction vehicles and agricultural vehicles of all makes. It is easy to install, robust, and attractively priced. What’s more, it will work with just about any type of exhaust system.

Our business strategy has been to concentrate on developing devices that can be retrofitted to large diesel engines. We supply tried and tested systems for large commercial and industrial vehicles, and we also develop and optimize products and procedures for our sales partners. Where appropriate, our equipment and services are accompanied by marketing concepts. All our products are supplied complete with support packages.

In Europe, our DYNTEST systems are manufactured, marketed and/or retailed by selected licensing partners, importers and specialist dealers. Overseas, we also market particulate filters and nitrogen-oxide (NOx) reduction systems.
The DYNTEST System Reduces Pollution and Costs

**EASE OF OPERATION AND VERSATILITY – THESE ARE THE ADVANTAGES: THE DYNTEST BUS SYSTEM FOR MONITORING, LOGGING, CONTROLLING AND REGULATING.**

The system electronics guarantee accurate controlling and monitoring of particulate filters (and also the other components involved in the after treatment of exhaust gases). What’s more, DYNTEST can be used with engines and exhaust systems of all makes and types, and also allows you to use any type of fuel additive. The system offers operational efficiency at a reasonable price – an attractive combination that will give you a long-term competitive advantage.

**Dependable performance**

The system is constructed around a sturdy bus system and a central control unit (i.e. the ControlBox). The system electronics, which were designed to withstand extreme operating conditions, have over the years performed with absolute reliability in countless exhaust systems.

The two chief advantages for your customers are fast installation and outstanding flexibility. The incorporation of a bus system in the design means that connecting up new modules to the ControlBox (e.g. GSM/GPRS/GPS modules, additive-dosing devices, or active filter-regeneration modules) is perfectly straightforward. That leaves the user with plenty of options when he has to think about future-proofing his vehicle fleet.

**Add-on modules and a reliable bus system increase the user’s options and reduce costs.**

1. **LiquiCat® module**
   - This pre-installed FBC additive-dosing module is complete in itself. It is supplied ready to use, and is under the dependable control of the DYNTEST system. The FBC module comprises an electric level indicator, an electromagnetic metering pump, and a transparent tank (for quick visual controls).

2. **RemCo® module**
   - Maintaining global contact: This module supports data retrieval (e.g. for filter maintenance) from vehicles just about anywhere on earth. Communication is either via the GSM network, which covers almost the entire globe, or the internet. The communication module provides direct contact with individual vehicles for monitoring and control purposes, and also supports the triggering of alarms. The GPS network can be used as a modern and highly cost-effective fleet-management tool.

3. **CatFire® module**
   - A spark of genius: The catalytic burner (diesel post-injection system) ensures fast active regeneration of the DPF (diesel particulate filter). This highly cost-effective arrangement is at all times under the control of the DYNTEST system. An additional module is available for the regeneration of the DPF under any operational condition. This module performs efficiently at temperatures of as low as 150°C.

4. **RegFire® module**
   - RegFire® is a retrofit diesel burner, which was designed for the regeneration of diesel particulate filters (DPF) in idling mode. The preset parameters guarantee durability, stability and a safe operation. Suitable for all low temperature applications.
The ControlBox – The Key Component in the DYNTEST System

DATA STORAGE AND EVALUATION
PARTICLE-FILTER MONITORING FILTER-REGENERATION CONTROL

The ControlBox has over the years served as the highly dependable central-control unit in CPK’s DYNTEST bus system.

It delivers up-to-the-second information about pressure, temperature and engine revs.

Over the course of time, diesel-particulate filters become dogged, and high levels of back-pressure build up. To prevent damage to the filter, and to the vehicle engine, effective countermeasures must be taken fast. This is precisely what the ControlBox does. It measures, logs and monitors back-pressure, exhaust-gas temperature, engine revs – and 7 other important parameters as well. If the monitored parameter values exceed (or fall below) preset maximum (or minimum) values, an alarm in the form of a flashing light is generated, and then a buzzer sounds. In addition, the ControlBox can trigger active regeneration and alarm systems.

Besides these safety functions, the ControlBox can also perform a wide variety of data-storage and evaluation tasks.

Reliable alarm functions.
The ControlBox provides uninterrupted displays of pressure, temperature and engine-rev data. That means the driver can initiate remedial action at any time – for example, by switching off the supply of additive, or by triggering the filter-regeneration process. The system can easily accommodate such courses of action, because it has two independent outputs (A1 and A2), each of which can be used to support a wide variety of additional system functions.

These two outputs are configured by means of either the PanelBox or a computer. Typical boundary values are already preset in the ControlBox, but these can be changed to meet the performance of your vehicle’s engine. Of crucial importance is the fact that all the alarm functions remain activated until they are acknowledged by the machine’s operator!

Flexible performance.

Special programs.
Special programs providing a variety of additional functions are also available. For example, there are control functions for throttle valves, additive-metering units, and exhaust-system burner processes. The various program functions are preset, and can easily be called up via the PanelBox or the computer.

Monitoring functions.
The ControlBox monitors the diesel-particulate filter continuously, shows error messages on the PanelBox and automatically stores all error messages generated. The ControlBox also has a built-in keyboard disable; this useful function prevents system users from making unintentional or unauthorized changes to the program settings. Of course, authorized access to keyboard functions is available at all times.

Analyses.
The ControlBox is able to record entire operational cycles over lengthy periods without any »drop-out« times, and is thus an extremely useful analytical tool. For example, the data it provides will tell you whether or not it would be worthwhile to install a diesel-particulate filter in a specific vehicle.
On-Road PanelBox
Displays temperature, pressure, and engine-rev data, as well as a setup menu + Switchable illuminated display + 6 function keys, 2 of which provide backlight alarm signals and buzzer

Off-Road PanelBox IP67
Displays current temperature and back-pressure values + Waterproof display to withstand rigorous outdoor operating conditions + LED illumination guarantees clear signalling + Alarm resets by means of a touch sensor

LED alarm
The driver is always kept up-to-date. The LED shows immediately the current system status (running/warning/alarm). In addition, the system automatically performs an LED self-test when you start it up. Simple and quick free programming using the software on the on-road panel.

Data evaluation with the DYNTEST Analyser.

The ControlBox records information that will help you make the correct long-term decisions about how you use your vehicles. It has a memory that can log backpressure and temperature data for up to around 900 days. What’s more, the engine data are collected all round the clock! With the DYNTEST Analyser, the information logged can be safely transferred to a computer for analysis. These same data can also be used to program the ControlBox. The Analyser comprises a signal converter (with a USB connector) and system software. All the data gathered are backed up in two separate files in the »access« file format, so that they cannot be manipulated. In addition, the logged data are protected by a password, and by automatically generated file names.

Specifications and technical data

ControlBox
- Temperature: Ambient temperature: –20 - 80 °C
  Measuring range: +50 - 1050 °C
  Tolerance: 2% of full scale
  Overpressure safe up to: max. 2,0 bar
- Power supply
  Current: 150 - 170 mA (operation); 1 mA (standby)
- Protection type: IP64
- Alarm outputs: 2 x 5A power high-side drivers, Overload-protected, BTS 436
- Inputs: 3 (RPM, 2. Temperature, analog, digital)
- Oscillation level: 10 g at natural frequency
- Memory: 16 MB
- Protection type: IP64
- Dimensions: 106 x 65 x 35 mm
- Interface: RJ 45 connector (Western type)
- Buzzer

On-Road PanelBox
- Protection type: IP44
- Dimensions: 106 x 65 x 35 mm
- Interface: RJ 45 connector (Western type)
- Buzzer

Off-Road PanelBox
- Protection type: IP67 (round shaped instrument)
- Dimensions: 85 mm ø, T = 44 mm
- Interface: Deutsch Plug
- Voltage supply via: Cable harness
- Temperature probe: K type
- Off- and water-resistant
The system can be used as on road and off road application. Heavy duty vehicle (HDV) such as commercial vehicles, busses, generators and ships are the main target group of the DYNTEST system. Vehicle data and data from diesel particulate filters are monitored, controlled and logged.

**ControlBox**

- **Temperature**: Ambient temperature: –20 - 80 °C
- **Pressure**: Measuring range: 0 - 600 mbar
  - Tolerance: 2% of full scale
- **Power supply**: 10 - 30 VDC
- **Protection type**: IP64
- **Alarm outputs**: 2 x 5A power high-side drivers, overload-protected, BTS 436
- **Inputs**: 3 (RPM, 2. Temperature, analogue, digital)
- **Oscillation level**: 10 g at natural frequency
- **Memory**: 16 MB (optional: 32 MB)
- **Dimensions**: 95 x 100 x 38 mm
- **Electrical protection**: Reverse polarity, short circuiting and overvoltage
- **EMC protection**: Suppressed against outgoing electrical interference
- **Certs**: As ControlBox

**Showcase**

The Showcase System was developed to record vehicle data and data from DPPs like the ControlBox. But it can additionally monitor, control and log two NOx values and CAN Bus data.

- **Temperature**: Ambient temperature: –20 - 80 °C
  - Measuring range: +50 - 1050 °C
- **Pressure**: Measuring range: 0 - 600 mbar
  - Tolerance: 2%
  - Overpressure safe up to: max. 2,0 bar
- **Power supply**: 10 - 30 VDC
- **Protection type**: IP64
- **Alarm outputs**: 2 x 5A power high-side drivers, overload-protected, BTS 436
- **Inputs**: 3 (RPM, 2. Temperature, analogue, digital)
- **Memory**: 32 MB
- **Dimensions**: 160 x 160 x 90 mm
- **Electrical protection**: Reverse polarity, short circuiting and overvoltage
- **EMC protection**: Suppressed against outgoing electrical interference
- **Certs**: As ControlBox

**BahnLogger**

The BahnLogger is used for trains and freight trains. Vehicle data and data from DPP are monitored, controlled and logged.

- **Temperature**: Ambient temperature: –20 - 80 °C
  - Measuring range: +50 - 1050 °C
- **Pressure**: Measuring range: 0 - 600 mbar
  - Tolerance: 2%
  - Overpressure safe up to: max. 2,0 bar
- **Power supply**: 10 - 30 VDC
- **Protection type**: IP64
- **Alarm outputs**: 2 x 5A power high-side drivers, overload-protected, BTS 436
- **Inputs**: 3 (RPM, 2. Temperature, analogue, digital)
- **Oscillation level**: 10 g
- **Memory**: 16 MB
- **Dimensions**: 175 x 80 x 55 mm
- **Electrical protection**: Reverse polarity, short circuiting and overvoltage
- **EMC protection**: Suppressed against outgoing electrical interference
- **Certs**: As ControlBox
  - plus railway EN 50155 (in progress)
The LiquiCat® – Fast, Problem-free Regeneration with FBC

CONTROL UNIT FOR THE DOSING OF FBC ADDITIVES

The filtering efficiency of a diesel particulate filter (DPF) also happens to be its Achilles heel, for the more soot it traps, the less efficient it becomes – and in the end it ceases to function altogether. Even worse, an increase in back-pressure could damage your engine and its ancillary aggregates. There is only one solution to this problem: cleaning (regenerating) of the filter through the regular burning off the particulate matter trapped in the filter.

Electronic control.
The LiquiCat®, which is an add-on module that works together with the DYNTEST ControlBox, provides perfect control of the regeneration process. Once fitted, its sensors are integrated in your tried and tested DYNTEST bus system, and it will control the dosing of the additives. If a critical value is reached, the LiquiCat® will trigger audible and visible alarm signals.

Reliable regeneration.
FBC (fuel-born catalyst) additives can reduce the temperature at which soot ignites (normally 650 °C) to around 350°C. This is a significant reduction in temperature, and if it is maintained for 1-2 minutes, the filter will be automatically regenerated, for the catalyst molecules in the soot are evenly distributed. The entire regeneration process will be completed in less than five minutes. In certain types of special-purpose vehicles, such as fork-lift trucks and waste-collection vehicles, the exhaust-gas temperature must be increased before regeneration can take place. But that’s no problem either – not if you have installed the DYNTEST CatFire® module.

All you need to know at a glance.
✓ Electronically controlled – the module is a part of the DYNTEST ControlBox
✓ Additive tanks are available in 2.0-litre and in 4.0-litre sizes. Both sizes are fitted with an electric level metre, a mounting fixture, and a holder for the dosing pump.
✓ Dosing pump available in 12 V/DC and in 24 V/DC versions.
✓ Wire harness
✓ Optional: Monitoring of pump functionality

Programming the LiquiCat® module exactly to your requirements.
The dosing module is easy to program, and can be set to meet a wide range of operating requirements. For example, you can choose between continuous and one-off injection of the additives. The module works together with the fuel-level indicator to ensure fully automatic metering of the supply of additives, so that the additive-to-fuel ratio remains constant. However, the amount of fuel in the tank can also be monitored manually. If you prefer continuous dosing of the amount of additive injected into the fuel, then the LiquiCat® Micro is the version for you. It’s ideal for less demanding operational applications, and is controlled independently of the monitoring system.

The advantages for you:
✓ Reliable electronic control system
✓ Works with the highly reliable DYNTEST bus system
✓ Adaptable to a wide range of operational requirements
✓ Highly cost-efficient
✓ Easy to install and operate
CatFire® – An Active Regeneration System Dose it all (HC)

ACTIVE REGENERATION SYSTEM FOR DOC-TYPE DIESEL PARTICLE FILTERS

There’s no escaping active regeneration systems if the temperature of the exhaust gases a vehicle produces are not sufficiently high – as is often the case with buses, waste-collection trucks and forklifts. Unfortunately, conventional flame burners have a very high energy requirement, which means they can only provide regeneration when the engine is idling – and not under full load.

Functions perfectly with all makes of engine.
The DYNTEST CatFire® module was designed to function under all types of operating conditions. And as an intelligent system, it permits diesel post-injection for coated filters and additive systems, independent of the engine management system. What’s more, the CatFire® can be installed quickly, and comes with a very attractive price tag.

Works perfectly together with the DYNTEST bus system.
The CatFire® performs outstandingly well when used in conjunction with the highly reliable DYNTEST bus system, which continuously monitors operational parameters such as temperature and back-pressure levels. If necessary CatFire® can quickly initiate the regeneration routine by directing injected diesel fuel along with the exhaust gases to the diesel oxidation catalyst (DOC) with a heat-up coating. Here the injected diesel fuel is burnt off catalytically. This simple, easy-to-control catalytic procedure raises the exhaust-gas temperature to a preset value. The start temperature of the catalytic burning of diesel fuel, e.g. 200°, depends on the coating of the DOC.

All you need to know at a glance.
✓ Electronic control functions provided by the DYNTEST ControlBox
✓ Pump casing with connections for the fuel-intake and pressure hoses
✓ Fuel-intake and pressure hoses with fuel-injector mount
✓ Injector nozzle
✓ Wire harness

Equipped for every eventuality.
The CatFire® module is safe and highly versatile. It can raise temperatures upstream of the diesel particulate filter (DPF) to a variety of widely different levels: for example, to 400°C in systems that make use of additives (e.g. systems equipped with the LiquiCat® module). In systems with uncoated filters, the temperature can be raised to 650 °C, which is the temperature at which soot normally ignites.

Specifications and Technical Data

<table>
<thead>
<tr>
<th>Specification</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>24VDC</td>
</tr>
<tr>
<td>Current in operating mode</td>
<td>max. 8 A</td>
</tr>
<tr>
<td>Current in standby mode</td>
<td>1 mA</td>
</tr>
<tr>
<td>Turbo (T)</td>
<td>5/T  ≤ 50 kW</td>
</tr>
<tr>
<td>Naturally aspirated (NA)</td>
<td>M/NA ≤ 170 kW</td>
</tr>
<tr>
<td>Medium (M)</td>
<td>L/NA ≤ 330 kW</td>
</tr>
<tr>
<td>Low (L)</td>
<td>S/NA ≤ 50 kW</td>
</tr>
<tr>
<td>Power consumption</td>
<td>45 W</td>
</tr>
<tr>
<td>Fuel consumption</td>
<td>&lt; 1% of overall fuel consumption</td>
</tr>
<tr>
<td>Dimensions of casing</td>
<td>120 x 120 x 60 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>1.7 kg</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP64</td>
</tr>
<tr>
<td>Wire harness</td>
<td>Water- and oil-resistant</td>
</tr>
</tbody>
</table>

Diesel post-injection for uncoated and coated filters and additive systems. The advantages for you:
✓ Regeneration regardless of the operating conditions
✓ Works with engines of all makes
✓ Highly reliable in operation
✓ Controlled by an intelligent bus system
✓ Robust, universally applicable solution
✓ Attractively priced
✓ Plug and Play installation
✓ Straightforward design
✓ Meaningful upgrades achievable with add-on modules
Filter maintenance by means of remote diagnostics.

A diesel-particulate filter is only as good as the monitoring system protecting it. If you're put in the picture as soon as an emergency arises, you'll save yourself time, money and aggravation. The DYNTEST RemCo® module can be programmed to send an SMS direct to your technician when a filter is in need of immediate attention. A remote assessment of the situation will generally be sufficient to diagnose and sort out the problem. But if you have to send a technician to carry out an on-the-spot check, the remote diagnosis will give him a fair idea of what has to be done. That in itself will help you keep a lid on costs. And the DYNTEST RemCo® module will also have the highly beneficial side effect of promoting customer loyalty, for it will enable you to offer attractive service contracts (e.g. for the maintenance and repair of exhaust filters).

WORLDWIDE REMOTE RETRIEVAL OF DATA FROM THE DYNTEST SYSTEM

The DYNTEST RemCo® module provides round-the-clock access to the measurement readings and alarm data stored in the memory of your DYNTEST system.

Alarm, monitoring and control functions. This information can be automatically transmitted to the internet at set intervals by means of GPRS/UMTS/CDMA data transfer; after that, all you have to do is download it. Quickly, conveniently, and at little cost. That means you can monitor the state of the filters installed in your vehicles’ exhaust systems with the GSM mobile network, for the GSM standard is recognized by just about every global web service provider. And since the DYNTEST RemCo® module utilizes GPS positioning technology, it can perform a wide range of additional functions, such as vehicle location, fleet-management tasks – and deterring thieves!

Operating requirement: In order to use the DYNTEST RemCo® module you will need a standard internet-enabled SIM card with a data (CSD_Call) number. You can obtain this type of card either direct from us, or from your mobile network operator.

System features at a glance.

- ECU – part of the DYNTEST system
- System case with integrated GSM/GPRS/GPS interface card
- Connector for GSM and GPS antenna
- Bus splitter for easy integration with the DYNTEST bus system
- Wire harness
Fleet management and protection against theft.

These days, anyone who runs a fleet of vehicles has plenty on his plate. If vehicle location, efficient fleet management and deterring thieves are among your top priorities, then the DYNTEST RemCo® module could be just what you need, for the system is efficient, and as it does not rely on expensive software, it also represents excellent value for money. The GPS function provides all the information required for vehicle-location and fleet-management purposes, and the GPRS service transmits all key data to the internet. The security of your vehicles is assured by the RemCo® component, which offers more effective protection from theft than conventional antitheft systems, since it will generate an alarm the moment a vehicle leaves a predefined radius. One added bonus of using the system is the fact that you can use the GPS data it collects in your other GPS applications – for example, in your Fugawi Global Navigator Google Maps, or in the Routing and Remote Access Service in your Microsoft computer system.

RemCo® saves time and costs. The advantages for you:

- Fast, inexpensive retrieval of data from the DYNTEST system
- Round-the-clock readouts and access to logged data
- Notification via SMS of critical exhaust-system conditions
- Remote diagnostics enable you to take immediate remedial action
- Remote diagnoses permit more efficient on-the-spot repairs and maintenance
- Better fleet management through more complete logging of journeys
- Attractive service packages (for filter repair and maintenance) help promote customer loyalty
- Fast amortization of acquisition costs

Specifications and Technical Data

- Ambient temperature: -20 to 70 °C
- Supply voltage: 10 - 30 VDC
- Current: 150 – 170 mA (for operation)
- Protection type: IP64
- Dimensions: 95 x 100 x 38 mm
- Electrical protection: short-circuit, overvoltage and polarity protection
- GSM frequency bands: 850 MHz, 900 MHz, 1800 MHz, 1900 MHz (quad-band)
- GPS: 12 channel

More details about the RemCo® module
**RegFire® – DPF Regeneration**

**Retrofit Fuel Burner**

**Operation at Idle Speed with Exhaust Gas Oxygen**
The gradually increasing amount of soot in a DPF requires regeneration in order not to impair the efficiency of the engine. Soot of uncatalyzed filters can be burned at approximately 600 °C, while systems using additives as oxidizers may be regenerated at temperatures as low as 450 °C.

**Electronic Control**
The trigger-off temperature will be detected by the trusted and manufacturer-independent DYNTEST monitoring system which will also control the reliable ignition and stable flame temperatures (400° - 650 °C).

**Special Features**
RegFire® is equipped with an electronically controlled vaporizer and a special long-life glow plug which will ensure a perfect combustion as well as a safe and stable operation at preset values. A rather special safety feature is the cooled shell. An integrated pump allows for an air wash of the vaporizer’s nozzle in order to prevent its blockage by coking formed by residual fuel. This sturdy and straightforward device is designed to be integrated with the DPF unit in order to save installation space and to limit a loss of temperature. To heat-up the catalyst under severe cold weather and difficult operating conditions RegFire® is an ideal supplement to the DYNTEST CatFire® Diesel Oxidation Module.

**Advantages at a glance:**
- Reliable and safe operation
- Sturdy and space-saving design
- Trusted components
- Highly cost-efficient as a module of the intelligent DYNTEST bus system
We work together with leading marketing companies in Asia (e.g. in Japan, Hong Kong and China), in North America (both the USA and Canada), as well as in a number of European countries.

Any special requirements? Would you like more information? If so, please get in touch.