Hidria Advancetec

Glow plugs with metal heating element

Glow plugs with pressure sensor

Electronics

Air and fuel heaters

Hidria

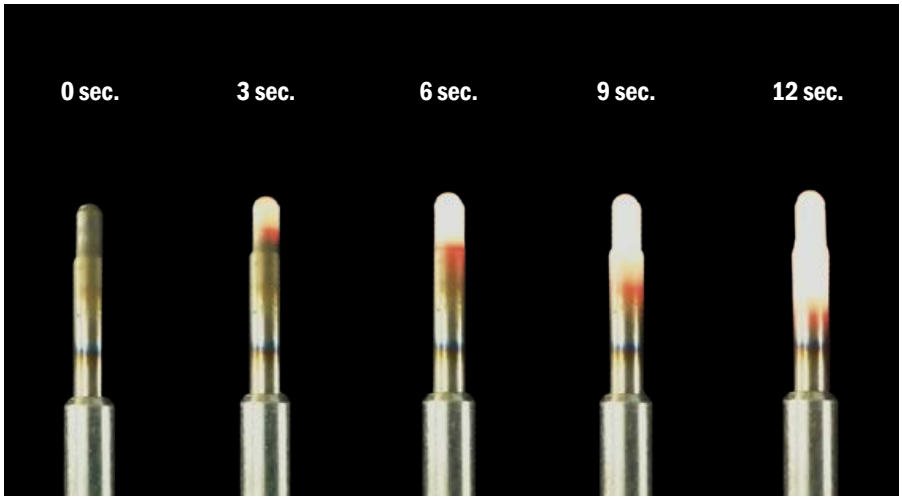
Glow plugs with metal heating element

High and Low voltage glow plugs with metal heating element enable quick diesel engine cold start by reaching temperatures up to 1150 °C.

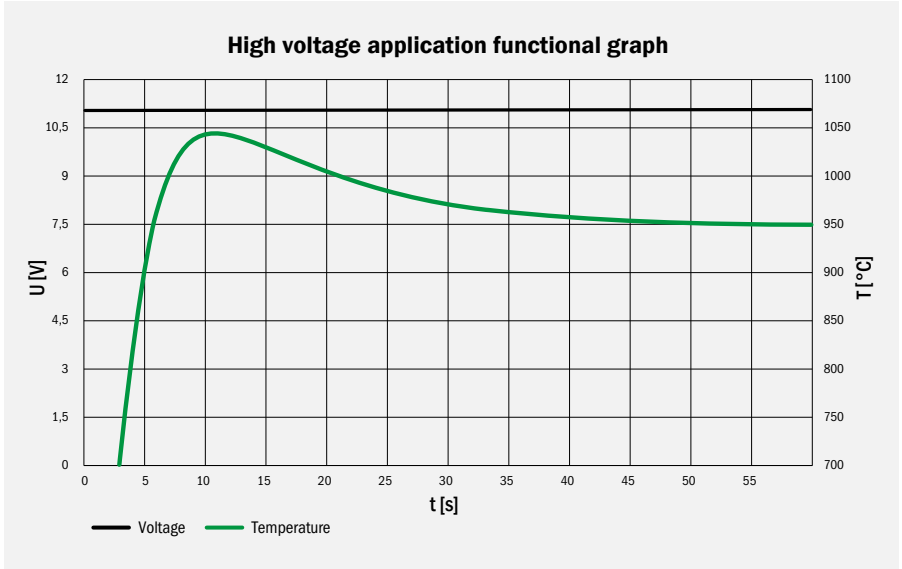
High performance is achieved with a specific heating element consisting of special resistors that are hermetically closed in a tube and filled up with ceramic powder.

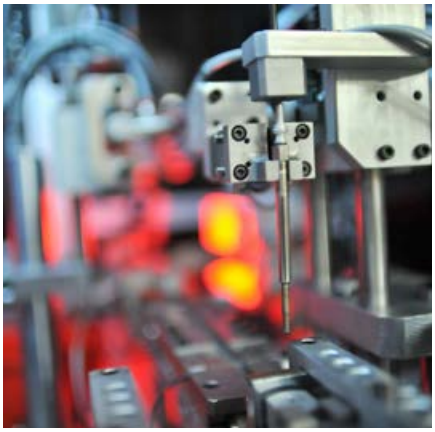
High voltage glow plugs are connected directly to the battery voltage and ensure temperature self-regulation due to selected materials. High voltage glow plugs reach the working temperature in 5 to 7 seconds.

Low voltage glow plugs are powered through an advanced electronic switch. This allows glow temperature regulation by adjusting the battery voltage. Low voltage glow plugs reach the working temperature in less than 3 seconds.



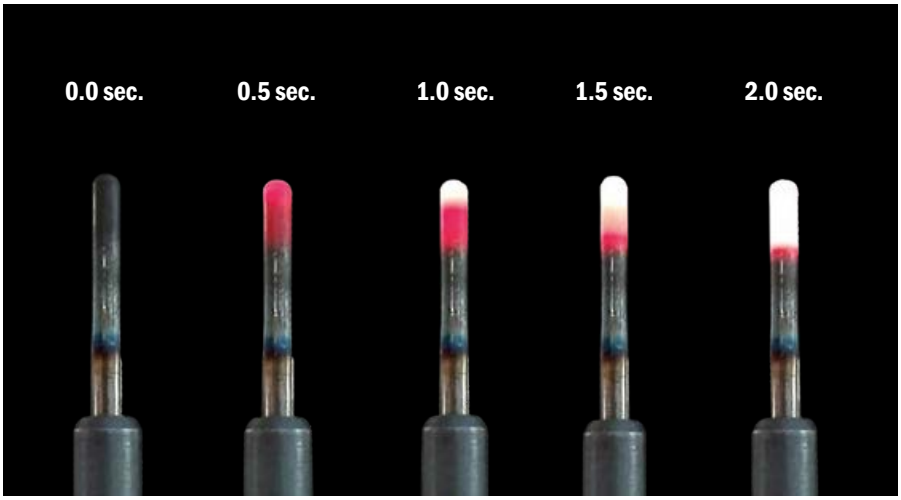
High Voltage Metal Glow Plug
Supplied voltage directly from battery (Phase1)/alternator (Phase2)
Heat-up@850 °C (up to 6s)
Glowing duration ~200 s/cycle
One glowing profile only
Operation command: coolant temperature
Typically used for EURO 3 & EURO 4



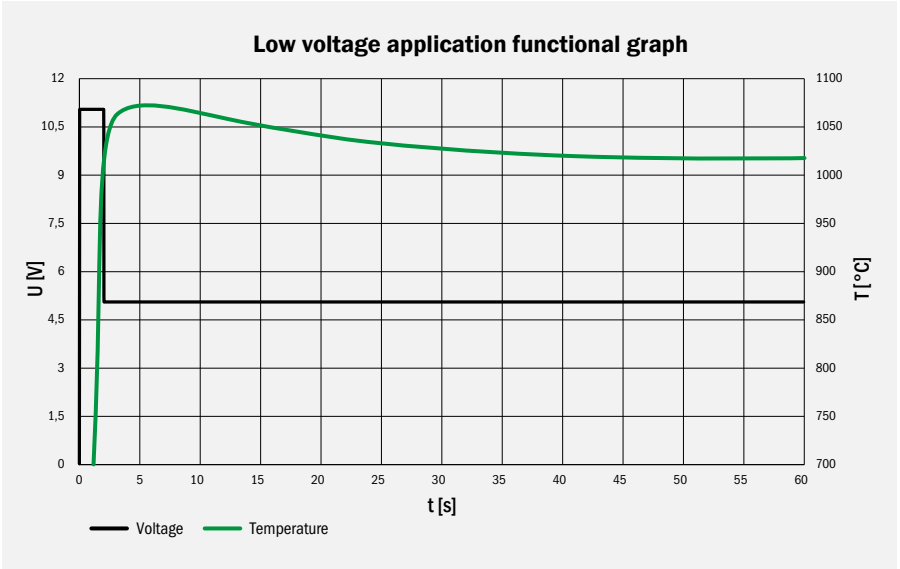


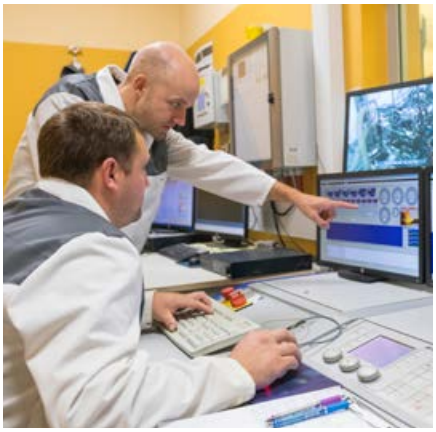
The main advantages of low-voltage glow plugs:

- Extremely short pre-heating time;
- Reliable startup (also at -40 °C);
- Controlled annealing in all motor operation regimes;
- The new design of the glow plugs is adapted to the requirements to occupy as little space in the motor as possible;
- Long service life;
- Reduced exhaust gas emissions;
- Reduced load on the vehicle's electrical system;
- Ability to whitstand extreme conditions (extreme heat, high pressure, vibratons, corrosive chemicals)



Low Voltage Metal Glow Plug
Supplied voltage regulated with PWM (for post-heating phase)
Quick heat-up@1000 °C (up to 3s)
Glowing duration up to~900 s/cycle
Glowing profile and duration could be adopted depending engine mode
Operation command: RPM, injected fuel quantity, coolant temperature, intake air mass, intake air pressure,...
Typically used for EURO 5 & EURO 6 & beyond





Glow plugs with pressure sensors

Hidria Optymus PSG pressure sensor is part of the innovative system for the cold start of diesel engines. This is a glow plug which is upgraded with a special sensor in order to measure the combustion pressure of each cylinder in real time.

Innovative concept

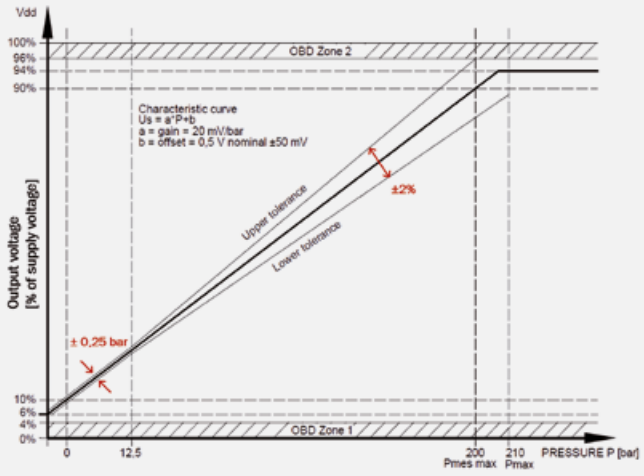
- The latest generation of pressure sensor technology
- Exclusive solution developed and patented by Hidria
- Modular design with metal and ceramic heating element
- Complete in-house production on fully automized assembly lines
- Suitable for EURO6 & EURO7 emissions standards

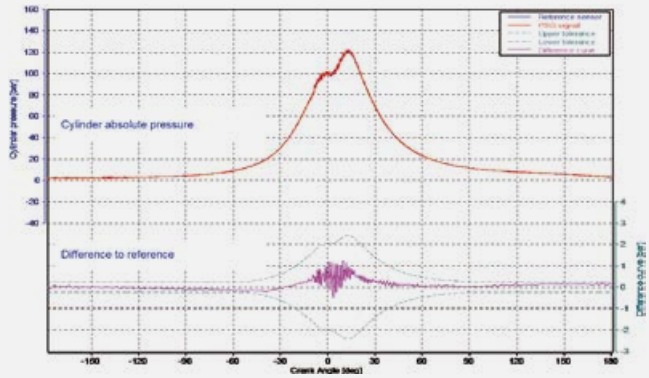
Additional functionalities

Many additional functionalities and benefits are also enabled by using these technologies:

- calculation of combustion parameters,
- cylinder balancing,
- combustion control,
- load pressure regulation,
- compensation for different fuel qualities,
- injector drifts corrections,
- removal of some sensors (as upstream NOx),
- easier and more robust engine calibration, improvement of cold start, engine acoustics optimization.

Technical characteristics



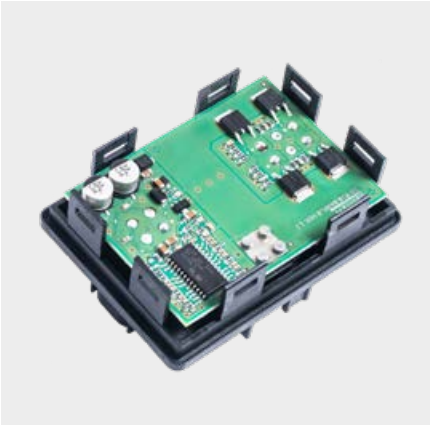


Performance

Operating temperature:	-40 °C / +150 °C
Pressure range:	0 – 300 bars, programmable
Supply voltage:	5V ±0,5 V
Output:	analog, ratiometric to supply
Bandwidth:	CPS (Cylinder Pressure Sensor): >20 kHz PSG (Pressure Sensor Glow Plug): 8 kHz
Lifetime Accuracy:	±2 % of the reading; ±0,25 bar at low pressure
Starting time:	< 50 ms
Reliability:	Engine lifetime, 1 billion pressure cycles

Electronics

The electronic controllers are designed for smooth starting of vehicles with internal combustion engines by controlling the glow plugs, intake air heaters and other actuators.



Glow plug control unit (GPCU)

- Reliability (no mechanical moving parts)
- Standalone versions (with internal temp. measurements) or
- ECU controlled versions (via PWM signal)
- Suitable for 3, 4, 5 and 6 cylinder engines
- Suitable for high voltage GP and low voltage GP
- Chassis mountable
- Power regulation control (dependent on power supply voltage)
- Diagnostics (Serial diagnostic interface protocol possible)

Protections

- Short circuit at each output
- Reverse polarity
- Over-voltage
- Load dump
- Over-temperature

Application:

- Diesel Cold Start System

Solid state relay (SSR)

- Reliability (no mechanical moving parts)
- Multiple output (different current rating)
- 12 V or 24 V versions
- LIN or CAN communication / ECU controlled / Complete diagnostic
- Engine mountable
- -40 to +125 °C operation temperature

Protections

- Short circuit at each output
- Reverse polarity (no current flow to the loads)
- Over-voltage
- Load dump
- Over-temperature

Applications

- Cold start system control
- Aftertreatment system control

Air heater with intergrated SSR

- DC 24 V @ 104 A; 2500 W (after applaing voltage for 5 sec.)
- Max. preglowing time without airflow: 30 s.

Electrical specifications (SSR):

- Reliability (no mechanical moving parts)
- Operating Voltage range: 16–32 V
- Under-voltage: <16 V
- Over-voltage: >32 V
- ECU controlled, active low (PWM operation also possible)

Applications

- Cold start system control

Air and fuel heaters

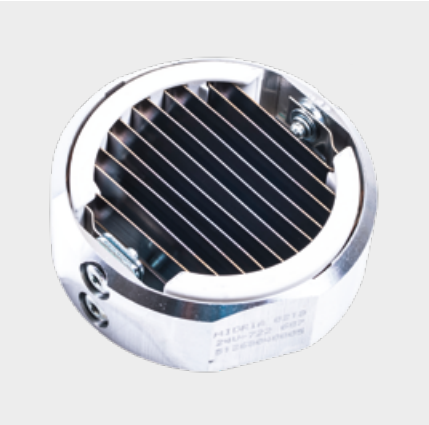
Cold starting of diesel engines with larger engine displacement requires more powerful and fuel pre-heating systems. Our diversified range of air and fuel heaters addresses various needs of the buyers of commercial vehicles. In case of special requirements, Hidra can also provide custom-developed heaters.

Intake air heater

Intake air heaters are the key element of cold start systems for diesel engines with larger engine displacement. They are installed in the intake air collector and provide the following advantages:

- Efficient pre-heating of the intake air and engine starting;
- More stable/smoother engine running;
- Reduced emissions that are harmful for the environment and health.

Areas of application of the product
Intake air heaters are used in cold start systems for diesel engines of cargo vehicles, agricultural machines and construction machinery.



Fuel heater

In diesel engines, fuel heaters are a key part of the diesel fuel heating system before the fuel enters the engine filter or pre-filter with additional sensors, such as the water probe, temperature sensors, etc.

In the colder months of the year, the fuel heater enables melting of the paraffin extracted from diesel fuel and it prevents clogging of the filter.

The innovative technology complies with the strict ecological requirements imposed on car manufacturers as part of global efforts to protect the environment and reduce harmful emissions.

Areas of application of the product
Our fuel heaters are used as diesel fuel filtration systems in the engines of cars, tractors, trucks, buses and heavy construction machinery.

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