PHLOX III
Ignition Control Systems

Control Actuators Injection Monitoring

Ignition Control Systems

PHLOX III

New Product Generation

- ✓ Modulated high-energy ignition unit
- ✓ FlexSpark Technology – Fully tuneable flexible spark
- ✓ Robust ignition, stable combustion
- ✓ Increased engine performances
- ✓ Easy integration via CAN
- ✓ Up to 16 cylinders
- ✓ Master-Slave Operation possible for up to 24 cylinders

- **Coil Rails**
- **Ignition Leads**
- **Pickup Sensors**
- **Coils**

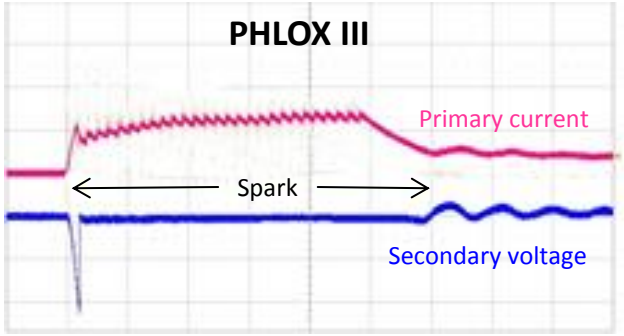
Benefits

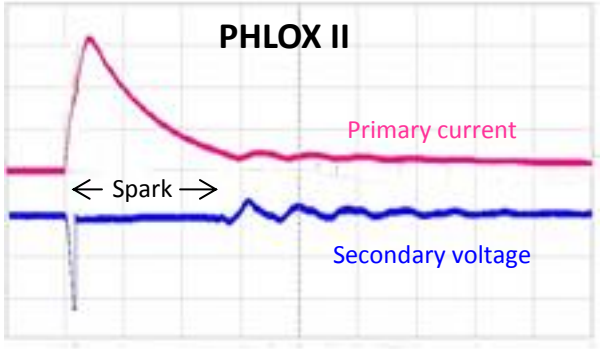
- ✓ High-energy capacitive ignition control unit with FlexSpark technology embedded
- ✓ The High-energy output is modulated, the spark is fully configurable in term of energy, length and current waveform
- ✓ Improved engine performances – lean burn limit and efficiency (depending on engine conception)
- ✓ Reliable ignition with low heating value gas (biogas, wood gas, mining gas, …)
- ✓ Complete system available (control unit, ignition coils, rails, leads and extensions)
- ✓ Up to 16 cylinders, 1800 rpm engines, 70 °C ambient temperature
- ✓ Up to 24 cylinders with 2 units in master-slave operation
- ✓ CAN-bus available (option: Modbus or 2x CAN)

FlexSpark

Fully tuneable spark to increase the inflammation probability and consequently the misfiring limits:

- ✓ Configurable spark energy level - Up to 1 Joule spark — PHLOX II: 280 mJ
- ✓ Configurable spark length - Up to 1.2 ms — PHLOX II: 0.5 ms
- ✓ Configurable spark profile (spark current waveform) — PHLOX II: not available





FlexSpark

- ✓ PHLOX III is not a classical multi-spark system with several successive breakdowns.
- ✓ The discharge of the high voltage capacitor is modulated to extend the spark to the configured width and avoid its premature extinction.
- ✓ Compared to a multi-spark system, FlexSpark shows less sparkplug wear.
- ✓ FlexSpark is particularly adapted for:
  - ✓ High efficiency / High Bmep gas engines
  - ✓ Gas engines with high level of turbulences and low ignition energy density.
  - ✓ Extreme lean burn conditions
  - ✓ Gas with low heating value (biogas, wood gas, mining gas, …)

Consequences of higher misfiring limits

- ✓ Engines can be run leaner (better emissions, less NO_x)
- ✓ Misfiring level is lower, combustion stability is better (less HC emissions)
- ✓ Engines can be run with higher spark advance (better efficiency, fuel consumption lower)

Testbench results on MAN 3262 LE202 V12 engine:

- ✓ Misfiring limit: PHLOX II: λ=1.75
  PHLOX III: λ=1.8
- ✓ Engine efficiency with PHLOX III compared to PHLOX II: > +0.5%

MAN E3262