Guascor Energy MODs&UPs: NOx based engine control

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Background

The use of Guascor Energy's own control systems (GCS) ensures the correct behavior of the equipment. The GCS control systems are the result of implementing the most technologically advanced engine, gen-set and power plant control management systems to optimize performance.

The GCS-E in particular governs the engine unit, making sure that the engine reaches the desired power at the necessary speed within the requested emissions level and achieving the best possible engine performance (efficiency, stability).

In addition to the standard control based on emissions estimating algorithms, the GCS-E now offers the option to utilize direct NOx measures to manage engine performance.

Product Overview

With NOx-based control, engine commissioning and maintenance are simplified since traditional carburation is not required.

The control system includes redundant NOx sensors to prevent availability loss caused by sensor failures. However, these sensors do require periodic maintenance and replacement. Improper maintenance can result in reduced availability.

For enhanced security and maximum availability, you have the option to choose the standard control as a backup. In this scenario, carburation is still necessary, but the process is somewhat easier as it can be automated (parallel to the grid) or semi-automated (in island mode).

The conversion to NOx based control requires:

- **Two NOx sensors** assembled in the engine exhaust. The sensors position will vary depending on the engine model and configuration.
- **Adaptation to assemble the sensors** that could affect the exhaust elbow, exhaust flexible pipe, exhaust insulation.
- **Sensors specific wiring** , that will also affect the electrical set up.
- **GCS-E** control with **specific firmware**

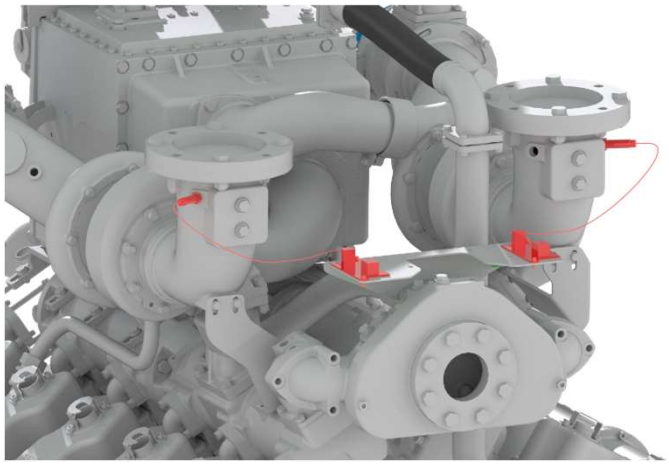


Figure 1_ NOx sensors assembly in double turbo engine configuration

Benefits

- Improved commissioning and service times due to reduced carburation times
- Improved engine operation by always ensuring right emissions level
- Improved diagnosis and protection by using the NOx signals
- Ensured stability of emissions over time

Application

Available upon request for the G-SL, SM and HM engines, with GCS-E control unit.

S Series	H Series	Control	Firmware
✔	✔	GCS-E	≥2.16C

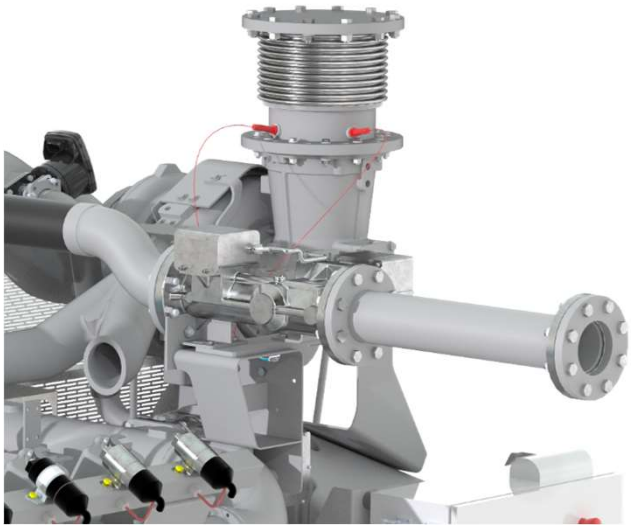


Figure 2_ NOx sensors assembly in single turbo engine configuration

Upgrade for installed fleet

1. **Available base kits (*)**: Include NOx sensors, support, cables.

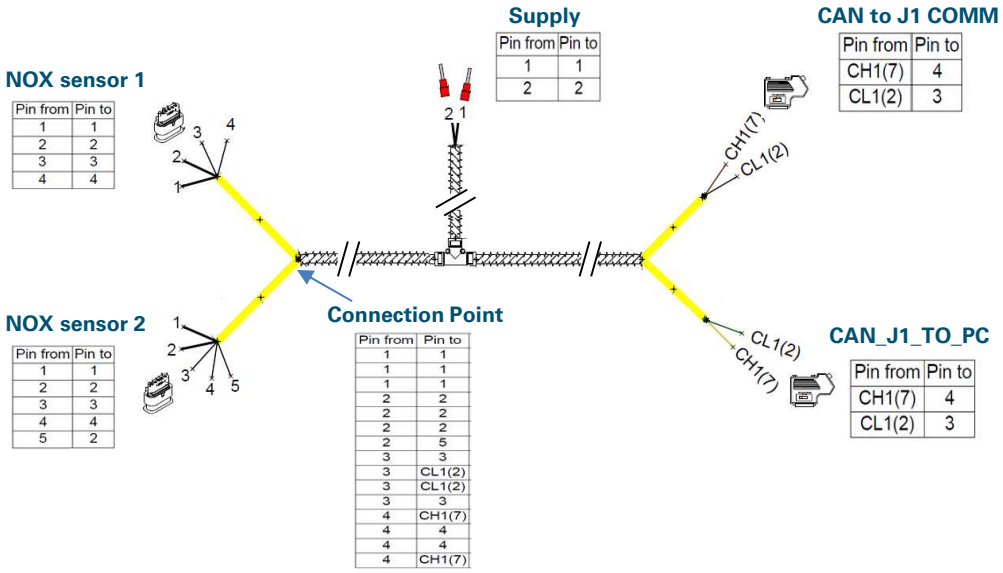
H Series	19.77.670
S series	19.77.680

(*) Valid for V engines. For L engines contact Guascor Energy

Extended kits for the assembly of the sensors in the exhaust (in exhaust elbow or flexible pipe) to be specified case by case based on engine specific exhaust configuration

2. **Changes in control unit:**
   - GCS-E firmware has to be updated in case the version in the unit in field is below 2.16C.
   - GCS-E settings need to be updated in all cases

3. **Cable connection**: NOx sensor cables need to be fed on one side and have to be connected to the GCS-E using a DB9 connector to cable J1.



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Oikia, 44
20759 Zumaia (Gipuzkoa) Spain PO Box 30
Tel: (Int'l +34) 943 86 52 00
Fax: (Int'l +34) 943 86 52 10

www.guascor-energy.com
info@guascor-energy.com