

## CASE STUDY

# G-volution diesel power unit improvements

### AIM

To deliver a dual-fuel solution that reduces fuel use, particulate emissions and carbon footprint of existing and new diesel engines.

### WHY?

G-volution's technology can reduce costs (30-40% fuel costs) at the same time as reducing carbon emissions (28-44% reduction) and contributing to higher air quality. Emissions from dual fuelled engines see much reduced particulates, lower CO and NOx but higher hydrocarbons. G-volution has pioneered a new technology that allows low temperature methane catalysis which addresses the issue of the increased hydrocarbons.

The technology allows diesel engines to run on diesel only where no secondary fuel is available. This flexibility will allow the cost effective roll out of the infrastructure needed to deliver secondary fuels, including compressed/liquified natural gas (LNG/CNG), propane (LPG) or, in future, hydrogen or ethanol.

Multiple fuels are possible: dual fuelling has been in use for 8+ years with G-volution including LPG, CNG/LNG as well as ethanol, methanol and hydrogen. The system gives flexibility allowing infrastructure to be built up during the use of the secondary fuel.

### WHAT IS IT?

G-volution has a patented and proven system to dual-fuel diesel engines. The technology allows the engine to co-combust diesel and natural gas. G-volution can substitute up to 90% of diesel with natural gas, depending on the duty cycle.



G-volution technology can:

- be retrofitted or applied to a new engine
- ensure lower costs, lower particulate emissions (up to 90%) and lower carbon
- use natural gas (including bio-gas), LPG (including bio-LPG) and hydrogen.

This can be done immediately, and cost effectively, allowing a +/- 3-year payback. G-volution has dual-fuelled rail locomotives in the USA and run over 50m km in HGVs in the UK.

### WHO IS INVOLVED?

G-volution and RSSB have delivered a feasibility study for this technology in UK Rail. G-volution, RSSB and Grand Central are now delivering a prototype which will be up and running on UK rail in the first half of 2019.