



## Replacement Of Worksite Diesel Locomotives

### The Challenge

Since opening 25 years ago, Eurotunnel has operated a fleet of 12 Diesel Engine Schoma locomotives as Works Trains within controlled tunnel worksites for the purpose of routine maintenance. The locomotives were originally manufactured for the construction of the Channel Tunnel before being converted and overhauled prior to commencing a life of Eurotunnel Infrastructure maintenance, hence they are naturally nearing the end of their life.

Within the tunnel environment, emissions generated within worksites are managed by the Normal and Supplementary ventilations systems which ensure an adequate flow of fresh air and the removal of any airborne particulates. Eurotunnel has an ongoing commitment to reduce its carbon foot print and an important part of that objective is to continuously strive to eliminate all types of pollutants in order to ensure a clean working environment and the good health of employees.

In addition to the health and environmental challenges, and in order to improve maintenance efficiency and productivity enabling increased tunnel availability for the benefit of Eurotunnel customers, there exists a business need to increase the number of worksite locomotives from 12 to 19 locomotives.

In summary, the challenge we faced was to source 19 locomotives which emit minimal pollutants, conform to the required rail standards, can be hauled as vehicles up to 100kph and operate up to 30kph hauling maintenance wagons up to 200T on gradients up to 1.1% for a duration of 8hrs.

### Process followed

Following consultation with experienced Eurotunnel maintenance operatives, we established a dedicated project team to define 'the perfect locomotive' technical specification. We commenced market testing in 2014 but unfortunately found that the state of technology at that time meant that the only viable solution that met the operational needs of Eurotunnel was 'like for like' diesel replacement. Fortunately, towards the end of 2015, we found that Battery Technology had advanced sufficiently to offer a viable diesel/hybrid battery solution. Our tender process significantly advanced our understanding of the technology and the potential to construct a new build shunting locomotive with the ability to operate fully on battery power alone for the 8hr duration of tunnel works.

This significant development became possible because of the dedication of Eurotunnel staff along with their willingness to share their knowledge, the proactivity and skills of a number of manufacturers during the tender process, and a collective commitment to take full advantage of battery technology to eliminate emissions completely rather than reducing them.

## Outcome

In October 2018, a contract was awarded to specialist rail equipment manufacturer Socofer to conclude detailed design and build 19 Battery Shunting Locomotives. Aegis Engineering Solutions will support Eurotunnel overseeing the Standards and Approval Strategy.

The Shunting Locomotive design takes into account all technical and welfare requirements requested by operators including for example, air-conditioning.

The project objective is to deliver the first operational approved battery shunting locomotive during 2020 followed by one per month until the order is complete.

Replacement of diesel shunting locomotives with battery shunting locomotives together with an ongoing related projects to replace diesel generators with battery packs will deliver a monumental step forward in our goal to eliminate 100% carbon emissions during maintenance works and improve the atmospheric conditions for Eurotunnel's employees during maintenance activities.



Note: Pantograph is for earthing purposes only during maintenance works.