



Case Study Pollution Prevention

National Grid, Woodhead Tunnel



The Project

National Grid required urgent additional environmental protection for the Woodhead end of its North Tunnel, which carried two 400Kv cables as part of the Stalybridge - Thorpe Marsh electricity transmission circuit. This part of the circuit had been switched out for several months to avoid the risk of explosion due to gas leaks from the red-phase stop joint at mid-tunnel level.

However, the circuit provided vital back-up to supply power to the North-West in the event of other important circuits failing, and it was also needed to cope with periods of high electricity demand. It was therefore agreed at national level that the circuit should be switched on again.

Adler and Allan Separator Services were asked to provide an urgent solution to the risk that the cable joint would fail, causing insulating oil to flow into the existing separator systems. We had seven days to supply a design, and design calculations, to Balfour Beatty for construction, taking into account the remoteness of the site and the need for easily transportable materials.

The Solution

We designed a new, two-stage 'Cascade' separator. With a length of over 200 metres, it would probably be one of the longest separators in the world. This would feed discharge into the tunnel's drainage channel, which fed directly into the existing Class 1 separators. We had to take account of the additional loads imposed by water levels backing up in the tunnel as a result of the new separator walls, so we commissioned Ramboll International Design Consultants to provide design calculations, which they were able to do within four working days.

The Outcome

The new separator, measuring 208 metres overall, was built in only four days and was commissioned and fully operational on the fifth day.

The works were completed ahead of time and on budget, despite the challenges of the wet season when the work was carried out.

Adler and Allan was contracted to provide emergency response services to National Grid in the event of a cable rupture, so that we could control the build-up of oil on the surface of the water in the new separator chambers. As back-up, we fitted floating booms at the outfall into the river, with additional spare booms kept in National Grid's building at the portal.

