



Tensar®



Both platforms comprised a 1m thick mechanically stabilised granular layer (MSL), with additional bearing capacity in the lifting area provided by a 0.65m thick TensarTech Stratum basal mattress below the 1m MSL.

Combined forces

Tensar mechanically stabilised layers and TensarTech Stratum basal mattress delivered economical working platforms, to tight timescales, for a new refinery block at Bharat Petroleum Corporation Limited's Kochi Refinery.

CLIENT'S CHALLENGE

The site was underlain by weak silts, which had to be excavated and replaced with engineered fill to create safe working areas at ground level. Traditional 'dig and replace' was found to be expensive and time-consuming (the platforms had to be ready within 60 days), so Petrofac International sought an alternative solution.

TENSAR SOLUTION

Tensar designed the platforms as Mechanically Stabilised Layers (MSL's), with Tensar geogrid incorporated in the granular fill. This meant platforms could be 40% thinner, reducing excavation and imported fill, while providing safe bearing capacity and cutting costs by 30%. The lifting area platform was built on a TensarTech Stratum basal mattress below the MSL to support heavier loads. Design and construction took just 45 days.

Kochi Refinery

Temporary working platform

📍 Kerala, India

BENEFITS

45 days to design

validate and install 2,100m² of working platforms

40% reduction in platform thickness

over conventional dig and replace

30% cost savings



The working platform for the crane lifting refinery components had to support a maximum load of 23t/m², with a maximum allowable settlement of 75mm.

PROJECT BACKGROUND

Petrofac International was awarded the contract for construction of the BS-VI MS Block Project at Bharat Petroleum Corporation Limited's Kochi Refinery, which will process surplus Naphtha into motor vehicle fuel meeting new emissions standards.

The block's heavy columns and components were assembled on site and lifted into place, requiring large cranes and temporary working platforms. This presented a challenge, as the underlying weak sandy clayey silts, with shear strengths between 12kPa and 36kPa, could not support the heavy construction loads.

The original plan was to excavate the weak ground and replace it with imported engineered fill, creating safe working areas with their top surface at ground level. However, this traditional 'dig and replace' approach would have meant excavating large volumes of silt and required significant amounts of fill. This would have been expensive and time-consuming – platforms had to be built within 60 days.

Instead, Tensar Geosynthetics India (Tensar) was brought in to develop an alternative solution. The team produced two platform designs, one for the main lifting area, for a maximum load of 23t/m² and maximum allowable settlement of 75mm, and one for the assembly area, for a maximum load of 15t/m² and a maximum allowable settlement of 25mm.

Both platforms comprised a 1m thick granular layer, mechanically stabilised with Tensar geogrid, to provide the required safe bearing capacity. Additionally, the lifting area platform was built on a 0.65m thick TensarTech Stratum basal mattress, filled with suitable granular fill below the MSL, to support the heavier loads in this area.

Tensar's approach reduced excavation depth by 40%, to just 1m in the assembly area and 1.65m in the lifting area. As a result, costs were 30% lower than dig and replace and the platforms could be built much faster, taking just 45 days from design to completion. Tensar was involved in detailed design (including FEA), helped develop the construction method, supplied the geogrid and supervised installation.

Main contractor:

**Petrofac International,
Sharjah**

Client:

**Bharat Petroleum
Corporation Limited
(BPCL)**