

1<sup>st</sup> November 2018



**ASHOK LEYLAND**

Case Study: **Hardline for Ashok Leyland 8 Poster Lab**: Chennai, INDIA

Project No: 0004SS

After successfully executing the hydraulic piping/hardline for the New Component Test Lab Bay 1 and Bay 2, Ashok Leyland had a requirement of replacing the existing hardline of their 6 Poster Lab and converting it to an 8 Poster Lab.

The Project key points are as follows:

- Implementation of large bore Non Welded Hydraulic / High Pressure / Hardline Piping system for the Component Test Lab Actuators
- Implementation of hardline piping and supporting structure to withstand high vibrations of the testing machines (upto 50 Hz)
- Issuance of all the drawings (General Arrangement and 3D Drawings) prior to installation. The installation process was based on pre-designed & pre-fabricated Hardline Pipe spools
- Finite Element Analysis of the Piping System Supports
- Pipes were pre-fabricated and they were carefully laid out in a defined space - meeting the design & schematic layout criteria

The various steps involved were as follows-

1. **Design / Engineering:** Since this was a project involving Hardline Piping for a test lab, prior design could be carried out. The end user had defined their requirement to which we proposed suitable piping specifications. The design was entirely carried out in-house based on necessary information like Hydraulic Schematic Drawing, Civil Layout, and RC Detail Drawing. The Hardline Piping design once issued was accepted by the End-User to suit the final application delivery, FE Analysis was done on the supports and the analysis showed that the supports could easily handle the vibrations. 3D Model drawing of the piping system was modelled and supplied.
2. **Fabrication:** The Hardline Piping involved in this project were all pre-designed and pre-fabricated since site layout details were accurately available at our end. All the spools were pre-fabricated, cleaned, painted in TMI facility in Canada and shipped to the site. These above methods are employed so that the hardlines do not get contaminated by dirt, dust, rust, pollution during transportation & handling, which could hamper the final Hydraulic application.

3. **Erection:** All the Hardline Piping was erected under the supervision of Cenergy Offshore Supervisors and Technicians. The erection had to be carried out carefully since the cleanliness requirement at the lab was of top priority.
5. **Flushing:** The Hardline was looped by Cenergy Offshore Flushing components and flushed. We achieved a "NAS 6" cleanliness level.
6. **Pressure Testing:** The Hardline had to be pressure / proof tested up to 4500 psi. The above pressure rating was subjected on the Hardline and was held for 30 min (standard states hold time of 15 mins is sufficient).
6. **Commissioning:** After the installation phase the Hardline was ready to be commissioned. All the Simulation actuators / equipment's are tested by the end user and the lab has been operational from last year itself.
7. **Hand Over:** After successful commissioning, all the spares, documentation, reports were handed over to the End-User and a copy was kept with Cenergy Offshore for future reference & traceability. The same was provided in digital format for easy access.