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Case Study: **Hardline for Maruti Suzuki Strength Lab**: Haryana, INDIA

Project No: 3227

Chase Resource has recently executed the second Hydraulic Piping / Hardline project in a state of the art simulation and R&D facility for Maruti Suzuki India Ltd out of Rohtak, Haryana in India. The Project was awarded on merit based on international best practices and past project executions carried by TMI / Chase Resource for MSIL. One of the leading Testing & Sensing Equipment OEM's was providing all the necessary Test equipment's and the same was to be integrated viz. the HPUs and Actuators.

The Project key points are as follows:

- Implementation of Non Welded Hydraulic / High Pressure / Hardline Piping system for the Vehicle Simulation Actuators.
- Issuance of all the drawings prior to installation. The installation process was based on pre-designed & pre-fabricated Hardline Pipe spools.
- Pipes were pre-fabricated and they were carefully laid out in a defined space - meeting the design & schematic layout criteria.
- Carrying out piping in an environment which demanded high standards of cleanliness.
- Installation of wide range of components like special type valves and accumulators.

The various steps involved were as follows-

1. **Design / Engineering:** Since this was a project involving Hardline Piping for a simulation lab, prior design could be carried out. The End-User sharedus preliminary information like hydraulic schematic drawing, equipment connection details based on which we could arrive on the configuration for Hardline like pipe size, wall thickness, connections, and layout of different components like valves & accumulators, etc. The design was entirely carried out in-house based on necessary information like Hydraulic Schematic Drawing, Civil Layout, and RC Detail Drawing. The designing process took a considerable amount of time since it required co-ordination with both the End-User as well as the OEM and also with a lot of requests for change / modification. Finally the Hardline Piping design was successfully issued and was accepted by the End-User with the confirmation of the OEM to suit the final application delivery.

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. By stating "cleaned" we mean that the Spools / Hardline system do not get contaminated by dirt, dust, rust, pollution, and chemical contamination during transportation & handling, which could hamper the final Hydraulic application. All hoses were fabricated / crimped at site using portable hose crimper.

3. **Erection:** All the Hardline Piping was erected under the supervision of Chase Resource Supervisors and Technicians. The erection had to be carried out carefully since the cleanliness requirement at the lab was very high. All hoses were installed using the right practices.

4. **Flushing:** All the Hardline and Hose connections were looped and the system flushed. We achieved a "NAS 0" cleanliness level which was applauded by the End-User and also by the OEM. It hardly took half a day to achieve the above cleanliness level which clearly demonstrates the merit of using Non Welded for such particular Testing Applications.

5. **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 were tested successfully to full capacity and to the complete satisfaction of the OEM and End-User.

7. **Hand Over:** After successful commissioning, all the spares, documentation, reports were handed over to the End-User and a copy was kept with Chase Resource for future reference & traceability. The same was provided in digital format for easy access.

The Project was completed within the schedule allotted to us, which was positively acknowledged by the End-User and by the OEM i.e. the Testing / Sensing Equipment Provider.