Fluid Control's NABL Certification Feat

Having established state-of-the-art Research and Development capabilities and expansive testing capabilities (which are recognized by Government of India's Department of Scientific and Industrial Research as an "In-House R&D Unit"), Fluid Controls is now looking to build up stronger product competitiveness on the backdrop of its new National Accreditation Board for Testing and Calibration Laboratories (NABL) certification. ***Railways Review*** takes a look.

The conferring of NABL certification to railways brake piping specialist, Fluid Controls Private Limited, comes as the company is getting itself oriented to rapidly meet the emerging braking needs of the mainline Indian Railways. With this, Fluid Controls aims to cater to the needs of the new higher horsepower, heavy haul freight locomotives and also enables the Company to expand its offerings for the new three phase, EMU, MEMU suburban railway systems and rapidly expanding Metro Railway systems as well.

Fluid Controls has harnessed its expertise over 45+ years to develop solutions including fittings, valves, manifolds, DIN pipe clamps, SAE flanges. It has the distinction for pioneering fitment of double ferrule, stainless steel tubes brake piping systems for the conversion of conventional coaches and locomotives. It boasts of fitment of 15 million+ installed connectors in the railways. Broadening its portfolio, it has added newly added services for design, testing and site assembly / piped assemblies. According to ***Dr. Tansen Chaudhari, Chief Operating Officer, Fluid Controls Private Limited,*** "The evolving operational requirements for fast moving, mainline passenger and freight rake movements during the recent years has brought in lot of dynamism in functioning of the braking systems. Recent evolution of longer and heavy haul rail freight transportation has further brought in requirements of brake piping systems those are reliable in their functionality and easier to maintain. At Fluid Controls, we have been making sustained investments to strengthen our research and development capabilities. This has been to cater to indexed requirements through right selection of materials and development of right in-house testing of the same and to make the products that strictly meet/ exceed product performance parameters like pneumatic pressure requirements, hydrostatic needs, anti-corrosion requirements, desired hardness among other criterions. The present NABL certification reinforces our high-end capabilities to meet the tougher requirements of the Indian Railways, thereby enabling us to do further value engineering to customer needs."

Sharing further details Dr. Chaudhari says, "Value engineering is delivered through our state-of-the-art manufacturing facility at Pune spread over 2.5 acres. It features multi spindle CNC machines, Lean Six Sigma- 5S-ERP driven operations for timely production. High-end processes are deployed for right raw material selection, and we use superior testing process like positive material indication, ultrasonic testing, spectro-testing, Micro-Vickers hardness and raw material hardness testing via state-of-the-art infrastructure which allow us to make durable brake piping solutions, on-time, every-time."

He adds, "At the core is our solid R&D and testing capabilities. Not to mention, our manufacturing infrastructure, all featuring cutting-edge technologies". The Fluid Controls R&D Center has in-house NABL Certified (ISO17025) Performance Testing and Metrology Laboratories for all pressure, vibration and

reliability tests. The company's laboratory has been used by the Defence department to conduct pressure and burst tests for hard bomb shells. The laboratory undertakes hydrostatic pressure up to 58,000psi, pneumatic testing up to 20,000psi. The laboratory has SCADA multi testing bench. Hydraulic impulse and vibration test, temperature cycling, corrosion resistance of plating as per IEC and ASTM standards can be performed by the lab. The laboratory also can undertake tests as per ASTM F1387 flexure fatigue, rotary flexure and tensile pull test. Vacuum Test - up to 750mbar, NRV's - cracking pressure to 0.5kg, cryogenic test setup for temperatures to -196degC is also performed by the laboratory. It possesses valve reliability test bench – for cycle testing among others.

"Using the basic laws of physics and hydraulics, we use analytical formulas, wherever applicable, for a basic design formulation. This helps us design the product from first principles. Our team refers to the latest published papers and standards during the process. The highly integrated in house 2D + 3D modelling does the required calculation. Following which, we create options through solid models via 2D and 3D design packages. This resolves physical conflicts and fine-tune the product helping us drive the cost savings opportunities. This further, enables new developments to be finalized with speed and detailing for offering to our clients. The developed design is validated virtually using Finite Element Analysis (FEA). The solid model is first meshed, applied with a suitable material model and subjected to appropriate boundary conditions and solved using finite element analysis. Graphical output helps compare the stresses/strains with material parameters. This virtual validation is iterated until a product is designed and validated so that can be manufactured." Mentions Dr. Chaudhari.

He concludes saying, "The R&D, validation, testing and manufacturing capabilities enables us to meet our new, pre piped assembly formation, complete site installation services involving on-site swaging and brake pipe installation services. Not the least, it assists us to match our new tag line 'fit and forget' based on 'First Principles' to deliver a reliable product meeting total lifecycle. Fluid Control's clients include, CLW, DLW, Alstom, Wabtec, MCF, RCF, ICF, Faiveley among others." **RR**