

INSTRUMENTATION PRODUCTS FOR **NUCLEAR** APPLICATIONS



WHO WE ARE



OUR COMPANY

Fluid Controls Private Limited was established in 1974 by Dr. Y.E. Moochhala, a Ph.D. from Northwestern University, with a vision to deliver high quality, high-performance products which delight customers. Headquartered in Mumbai with a manufacturing facility at Pune, Fluid Controls® has a state-of-the-art R&D centre, which offers clients customized solutions based on analytical formulations, 3D Modelling and FEA.

OUR CUSTOMERS

Fluid Controls® is a premier supplier for critical applications for nuclear plants, defence, onshore and offshore oil and gas installations, process/power plants, and critical brake piping applications in the railways.

Our Nuclear Customers

Fluid Controls® is approved by Nuclear Power Corporation of India (NPCIL) for a range of products. We have a tradition of supply for over 30 years for NPCIL new projects and for maintenance requirements. Our supplies are directly to NPCIL and to Engineering & Procurement Contractors.

OUR PRODUCTS

Fluid Controls® offers clients a complete range of instrumentation products - Connectors and Adaptors, Valves, Manifolds, DIN Pipe Clamps, and SAE Flanges. Our products ensure precision connections which are designed based on specific application requirements and which perform to international & customer standards.

Our Product Approvals for Nuclear Applications (NPCIL)

- Approved for Needle Valves, Manifolds, Brass Pipe Fittings, Catenary Cable Clamps
- High Temperature/High Pressure Manifolds
- Bellows Sealed Manifolds
- Only Indian vendor approved for Double Ferrule Fittings for critical area applications
- All products conform to NPCIL specifications and perform to Seismic, Non-Seismic vibration and LOCA test requirements



OUR RESEARCH & DEVELOPMENT

Since inception, Fluid Controls® has engaged in original R&D and has had an ethos of developing “Make in India” products. Our state-of-the-art design center is recognised as an “In-House R&D Centre” by DSIR (Department of Scientific & Industrial Research). In recent years, Fluid Controls has developed over 25 new products and has been granted its first Global Patent. We have a fully equipped Performance Testing Laboratory for all pressure, vibration & reliability tests. Our laboratory has been used by the Defence department to conduct pressure and burst tests for HARD Bomb Shells. Our Metrology Laboratory has a complete range of measuring equipment. We have been granted NABL (National Accreditation Board for Testing and Calibration Laboratories) approval in accordance with ISO/IEC 17025:2017.

OUR CERTIFICATIONS

Fluid Controls® has the latest system and performance certifications:

- ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, PED, IRIS
- NABL (ISO/IEC 17025:2017) as per the identified scope
- Product performance certifications include ASTM F1387-99 (2012), ISO 19879, NGV, ISO 15500, ECER 110, PDA for DIN Single Ferrule Fittings, ABS PDA for Fittings, Valves and Manifolds, MSS-SP-99, API 607 and Fugitive Emission
- Special certifications to IEC and EN standards for corrosion and shock/vibration for fittings

OUR ACHIEVEMENTS

Fluid Controls® is the recipient of the “CII Industrial Innovation Award for Medium Scale Manufacturing Organizations” and has been recognized as “One of the Top 25 Innovative Companies of the Year 2019”. We have also received “India 5000 Best MSME of the Year 2020” for Quality Excellence. Other recognitions include “Rail Solution Provider of the Year [Instrumentation]” at Rail Infra & Mobility Business Digital Awards 2020 and “Top 10 Urban Infra Solution Provider of the Year 2019” by Urban Transport News, and the award for “Excellence in Technical Innovation” by ISA Maharashtra Section at PPA Meet 2020.



NUCLEAR: (NCPIL) APPROVALS



- [Fluid Controls®](#) approved for Needle Valves, Manifolds, Brass and Pipe Fittings, Catenary Cable Clamps
- Approval for [Double Ferrule Instrumentation Fittings for Critical Application Areas](#) (only Indian vendor)
- Approval for [High Temperature/High Pressure Manifolds](#) (2016)
- Approval for [Bellows Sealed Manifolds](#)
- [Performance](#) to Siesmic, Non-Siesmic vibration and LOCA test requirements

NUCLEAR: MRO & OTHER SUPPLIES

NPCIL FACILITIES



Direct supplies to NPCIL facilities across the country for maintenance and spares requirements:

- Kakrapar Atomic Power Plant
- Rajasthan Atomic Power Plant
- Tarapur Atomic Power Station
- Madras Atomic Power Station
- Kaiga Atomic Power Station
- Narora Atomic Power Station
- Kudankulam Nuclear Power Plant
- Bhabha Atomic Research Centre (BARC)
- Department of Atomic Energy (DAE) / Directorate of Purchase & Stores (DPS)
- Indira Gandhi Centre for Atomic Research

NUCLEAR PROJECT SUPPLIES

Fluid Controls has supplied packages for all major NPCIL projects. These supplies are to EPC's such as Larsen & Toubro, HDO, Punj Lloyd, Dodsai, Pennar, Avasaralla, MTR, Cold Weld, Technimont ICB.

Kakrapar Atomic Power Plant (KAPP)

- KAPP 3 & 4 – Field Instrumentation Package
- KAPP 3 & 4 – Primary Piping Package
- KAPP 3 & 4 – Balance of Turbine Island Package
- KAPP 3 & 4 – UGP & WMP Package
- KAPP 3 & 4 – Common Service Package
- KAPP 3 & 4 – Fuel Machine Head
- KAPP 1 & 2 – Vapour Based Online Heavy Water Loss Monitoring System
- KAPP 3 & 4 – Fire Water Spray System Package
- KAPP 3 & 4 – Tritium in Water Monitoring System (TIWM)
- ITER India – CWS Project



Rajasthan Atomic Power Plant (RAPP)

- RAPP 7 & 8 – Field Instrumentation Package
- RAPP 7 & 8 – Primary Piping Package
- RAPP 7 & 8 – Balance of Turbine Island Package
- RAPP 7 & 8 – UGP & WMP Package
- RAPP 7 & 8 – Common Service Package
- RAPP 7 & 8 – Switch Yards / Fire Water System
- KAPP 3 & 4 – Fuel Machine Head
- RAPP 7 & 8 – Fire Water Spray System Package



Package Details

- KAPP 3 & 4 and RAPP 7 & 8 – Field Instrumentation Package
- KAPP 3 & 4 and RAPP 7 & 8 – Primary Piping Package
- KAPP 3 & 4 and RAPP 7 & 8 – Balance of Turbine Island Package
- KAPP 3 & 4 and RAPP 7 & 8 – UGP & WMP Package
- KAPP 3 & 4 and RAPP 7 & 8 – Common Service Package
- RAPP 7 & 8 – SWITCHYARDS – Fire Water System
- KAPP 3 & 4 – Fuel Machine Head
- KAPP 1 & 2 – Vapour Based Online Heavy Water Loss Monitoring System
- KAPP 3 & 4 and RAPP 7 & 8 – Fire Water Spray System Package
- KAPP 3 & 4 – Tritium in Water Monitoring System (TIWM)
- ITER India – CWS Project



PRODUCTS FOR NUCLEAR APPLICATIONS

INSTRUMENTATION FITTINGS

- Range of Double Ferrule Compression Tube Fittings
- PDS by American Bureau of Shipping (ABS)
- Comply to NPCIL technical specification PC-E-924 R1 for SS Double Ferrule Compression Fittings
- Comply to NPCIL technical specification PP-E-155 R4 for Brass Double Ferrule Compression Fittings
- Performance tested to ASTM F 1387-99 (2012), Comply with vibration norms of BS EN 61373 and corrosion resistance of IEC 60068-2-52
- Working Pressure as per ASME B31.3 performance temperatures to 350°C
- End connections and materials to customer requirement sizes up to 2 inches
- Heat Code Traceability



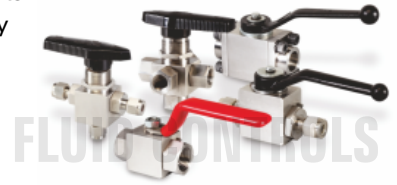
INSTRUMENTATION MANIFOLDS

- Two, Three and Five Valve Manifolds (Separately mounted, Direct mounted - T Type, H Type, Co-planar and Flanged configurations)
- Seismically and Non-Seismically Qualified Three and Five Valve Manifolds (Separately mounted, Direct mounted) in compliance with NPCIL technical specification PC-E-143
- Working pressures up to 10,000 PSI(g) (689 bar)
- IBR Certification offered
- Case hardened non-rotating swiveling plug/ball and thread above the seal design
- End connections and material to customer requirements
- Heat Code Traceability



FULL BORE VALVES

- Complied to NPCIL technical specification PC-E-711
- End connections and material to customer requirements
- Heat Code Traceability



BRASS CHECK VALVES

- Comply to NPCIL Valve specification sheet (VSS)
- Working pressure up to 11 KG/CM²
- End connections and material to customer requirements
- Heat Code Traceability



NEEDLE VALVES

- A wide variety of designs including two-way, three-way with drain plug, multi-port, block & bleed in SS and Brass
- Case hardened non-rotating swiveling plug or ball and thread above the seal (screwed bonnet) design
- Case hardened non-rotating swiveling plug and thread below the seal (integrated bonnet) design
- Working pressures up to 15,000 PSI(g) (1034 bar)
- Seismically and Non-Seismically Qualified Needle Valves (two-way, three-way with drain plug) complied to NPCIL technical specification PC-E-635
- Life Cycle test qualified Needle Valves (two-way, three-way with drain plug) in compliance with NPCIL technical specification PC-E-635
- CV tested Needle Valves as per customer requirement
- Specially designed, adapted and certified low temperature valves offering safe, efficient services for temperatures to 196°C (-320°F)
- Needle Valve PDA by American Bureau of Shipping (ABS)
- Certified MSS-SP-99, Fugitive Emission Certification as per API 622 / ISO 15848
- IBR certification offered
- End connections and valve material to customer requirements
- Heat Code Traceability





PRODUCTS DEVELOPED FOR NUCLEAR APPLICATIONS

We offer clients customized solutions based on Analytical Formulations, 2D and 3D Modelling and Finite Element Analysis. Adopting a “Design for Six Sigma” approach, all products designed by Fluid Controls® are developed from First Principles. Each design is 2D and 3D modeled and validated using the latest software and FEA. The new products designed by Fluid Controls® include high pressure valves, cryogenic valves, special connectors, bellows sealed valves, pre-fabricated systems for diverse sectors such as nuclear, railway brake piping systems, oil & gas.

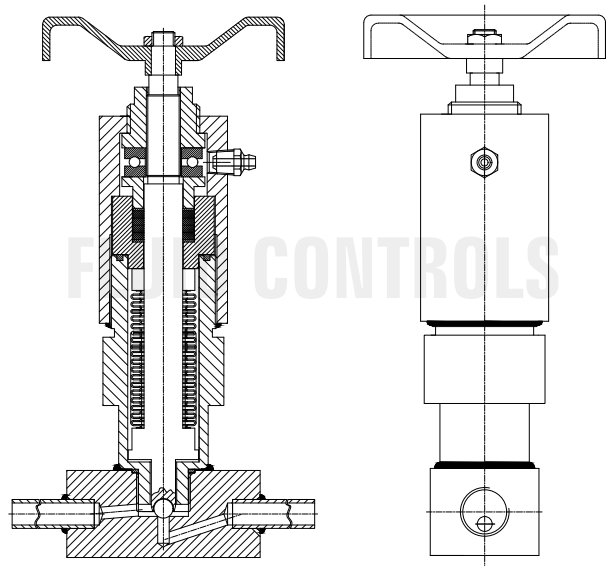
BELLOWS SEALED MANIFOLD

- Specification PC-E-415 Rev 0 (April 2009) for bellows sealed manifolds
- Compact design keeping space constraints.
- Bellows from NPCIL approved vendors, with open-close reliability of 10,000 cycles
- Performance standard includes 150 open/close cycles at 200kg/cm² and 300°C



HIGH TEMPERATURE HIGH PRESSURE MANIFOLD

- Specification PC-E-143 Rev 0 (Feb 2009) for five valve manifolds amended to include an additional performance standard
- 150 Open/Close cycles at 110kg/cm² and 300°C
- Unique seal design based on:
 - Temperature gradient based principles
 - Combination of special grade metal and thermoplastics
 - Reliability considerations of 150 cycles
 - Compact design
- Prototype successfully tested at NPCIL designated laboratory (Fluid Controls Research Institute at Palakkad)





FLUID CONTROLS

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