The Science OF MAKING...

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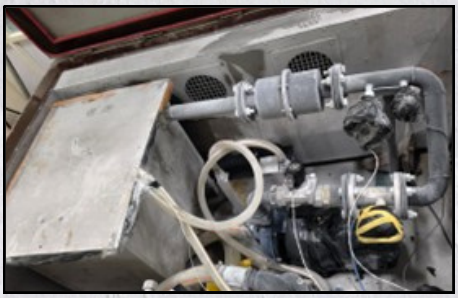
TECHNICAL ACHIEVEMENTS

LOW-TEMPERATURE ENDURANCE TESTING OF SURGE RELIEF VALVES

CMTI has developed a dedicated low-temperature endurance test setup for qualifying aerospace surge relief valves (SRVs) using Jet A-1 fuel, engineered to operate at – 30 °C to – 40 °C while sustaining flow rates exceeding 350 LPM. Anticipating increased fuel viscosity, higher hydraulic losses, and significant internally generated heat under sub-zero conditions, the test loop was deliberately designed with enhanced thermal management and flow capability. The system incorporates high-power centrifugal pumps along with optimised piping and instrumentation to ensure stable and repeatable performance under extreme conditions. Using this facility, three SRVs successfully completed 2,000 endurance cycles each under tightly controlled sub-zero and high-flow conditions, demonstrating the robustness and effectiveness of the developed test system.



TECHNICAL PRESENTATION/CONTRIBUTORY TALKS

BEST PAPER AWARD AT IFP-26

Mr. Tom Thampy, Scientist-E & Group Head (Aerospace Laboratory), presented a technical paper titled "Demonstration of Lean Techniques and Emerging Technologies in Fluid Power Systems to Simplify the Challenges of Heating Fluid" at the International Conference on Innovation in Fluid Power (IFP-26), held during 24–25 January 2026.

The paper is co-authored by Emmanuel R., Deepak Singh D., Vijet, and Dattatreya, was presented under Track-1: Innovation and Advancements in Fluid Power Technologies. The conference was organised by IIT Dhanbad in association with the Fluid Power Society of India (FPSI). The paper was honoured with the Best Paper Award in recognition of its technical merit and practical relevance.

The work presents a comparative study of various fluid-heating approaches, including immersion heating, thermic-fluid heating with heat exchangers, and inline induction heating, supported by multiple case studies. It highlights the challenges and advantages of each method, enabling informed selection of heating techniques for the qualification testing of aerospace hydraulic elements, addressing stringent temperature requirements of 90 °C, 135 °C, and 270 °C.

EVENTS/ WORKSHOPS ATTENDED

CMTI PARTICIPATION IN IMTEX FORMING 2026

Mr Moharaj B. R. (Jt. Director), Mr Niranjan Reddy (Jt. Director), Mr Arun Kumar J. G. (Jt. Director), and Mr Krishna Rathod (Scientist-F) were invited as inaugural guests at IMTEX Forming 2026.
Mr Tom Thampy (Scientist-E), Mr Raju V. R. (Scientist-E), Mrs Sarmistha Dhan (Scientist-D), Mrs Deepa R (Scientist-D), Mr Murali Krishna R. (Scientist-D), Mr Gopi Krishna S. (Scientist-D),and Mr. Bishnu Prasad Sahu (In-Charge, Business Development) showcased the capabilities.

CMTI ENGAGES WITH FRAUNHOFER IWS DELEGATION ON ADVANCED MANUFACTURING TECHNOLOGIES

The CMTI team comprising Mr. Tom Thampy (Group Head-ASL, Scientist-E), Mr. Vinod A. R. (Group Head–AM, Scientist-D), and Dr. Anusha Epparla (Scientist-C) participated in a focused technical interaction with experts from the Fraunhofer Institute for Material and Beam Technology (IWS), Dresden, Germany, Prof. Dr. Frank Brueckner (Technology Field Manager, Additive Manufacturing and Surface Technology) and Dr. Andreas Wetzig (Technology Field Manager, Cutting and Joining) during their visit to Bengaluru on 19 January 2026 at the Fraunhofer India Office. The meeting brought together representatives from Indian industries and research institutions to exchange insights on additive manufacturing, surface engineering, and advanced manufacturing technologies in cutting and joining.

The objective is to identify technological synergies and potential areas for collaboration. The session included introductory remarks, presentations by Fraunhofer India Office and Fraunhofer IWS, and discussions on emerging high-demand technology domains relevant to national missions and future industrial growth in India. The interaction provided a valuable platform for knowledge exchange and strategic Indo-German collaboration, reinforcing pathways for joint research, innovation, and industry engagement in advanced manufacturing.

CMTI PARTICIPATION IN AUTO COMPONENTS INDUSTRY TRANSFORMATION SUMMIT 2026

Mr. Bishnu Prasad Sahu attended the 2nd Edition of the Auto Components Industry Transformation Summit 2026, jointly organized by ACMA and IMTMA, held at Taj Yeshwantpur, Bengaluru, on 20 January 2026. The summit provided a valuable platform for industry leaders and stakeholders to deliberate on emerging trends, technological advancements, and transformation strategies shaping the future of the auto components sector.

CMTI SHOWCASES CAPABILITIES AT BYNDOORU UTSAVA INDUSTRIAL EXPO 2026

Mr Raghu B.(Librarian II) and Mr Manjunath K.N.(Office Superintendent I) represented CMTI and showcased its capabilities at the Byndooru Utsava Industrial Expo 2026, held from 24–26 January 2026 in Byndooru, Udupi. The expo, organised by the Byndooru Utsava Samithi, provided an effective platform to engage with industry stakeholders, promote CMTI's technological strengths, and foster potential collaborations.

CAPTAIN BRIJESH CHOWTA, MEMBER OF PARLIAMENT FOR DAKSHINA KANNADA CONSTITUENCY, VISITED THE CMTI STALL,

SRI KOTA SRINIVAS POOJARY, MEMBER OF PARLIAMENT FOR UDUPI-CHIKKAMAGALURU CONSTITUENCY, VISITED THE CMTI STALL

CMTI PARTICIPATION IN CII INTEGRATE 2025

Mr Krishna Rathod (Scientist-F) and Mr Bishnu Prasad Sahu attended CII Integrate 2025, a flagship initiative organised by CII Karnataka on 30 January 2026. The event brought together the Annual Procurement Forum, Buyer–Seller Meet, Industrial Exhibition, and Technical Conference on a single platform. CII Integrate aims to strengthen Karnataka's industrial ecosystem by connecting large companies, public sector undertakings, and government agencies with MSMEs from across the state and neighbouring regions, fostering collaboration and new business opportunities

EVENTS/CELEBRATIONS

2ND INDUSTRY MEET ON TEXTILE MACHINERY AT CMTI

CMTI, in partnership with the Bureau of Indian Standards (Textiles Division), hosted the 2nd Industry Meet on Textile Machinery on 20 January 2026 at CMTI. Building on the inaugural 2024 edition, the meet brought together industry leaders, researchers, and policymakers to address technological gaps, promote indigenous innovation, and strengthen India's textile machinery ecosystem The event was inaugurated by Retd. Prof. S. M. Ishtiaque (IIT Delhi), Dr. Nagahanumaiah (Director, CMTI), Dr. K. Selvaraju (Secretary General, SIMA), Shri Ketan Sanghvi (Director, Laxmi Shuttleless Looms), and Shri Sachin Kumar (Executive Director, TMMA). Deliberations emphasized a strategic shift from "Make in India" to

“Originating in India” to achieve self-reliance in capital goods for the textile sector. Key highlights included CMTI’s commercialisation of a 450 ppm high-speed shuttleless rapier loom, ongoing development of a 550 ppm loom, and progress toward an indigenous low-cost controller for enhanced global competitiveness. Technical sessions showcased patented and ready-to-commercialise innovations, energy-efficient intelligent machinery enabled by AI, digital twins, and vision-based predictive maintenance, as well as emerging applications of 3D woven technical textiles for aerospace and defence weight reduction. Strategic roadmaps toward Textile Industry Vision 2047 highlighted priorities such as synthetic spinning, air-jet loom development, waste recycling technologies, and large-scale adoption of technical textiles and standardisation.

Panel discussions underscored critical gaps in high-value weaving and processing despite strong spinning capabilities, emphasising the need for Industry 4.0 automation, Common Facility Centres, labour reforms, and robotics-enabled solutions to enhance global competitiveness. The meeting concluded with a strong consensus on advancing R&D, sustainability, standardisation, and government-supported schemes to position India as a global leader in textile manufacturing by 2047, followed by a vote of thanks and laboratory visits at CMTI.

CELEBRATION OF REPUBLIC DAY AT CMTI


Republic Day was celebrated with great pride and patriotic fervour at CMTI on 26 January 2026. Dr. Nagahanumaiah, Director, hoisted the National Flag, followed by the rendition of the National Anthem, commemorating the day the Constitution of India came into effect. Marking the spirit of freedom and nationalism, the wards of employees and members of the security staff presented vibrant group performances that filled the occasion with enthusiasm and patriotic zeal.



TRAINING INITIATIVES

DISCUSSION ON CMTI TRAINING PROGRAMS AND CAAP SCHEME WITH BMS COLLEGE OF ENGINEERING

A discussion was held on 06 January 2026 with the Department of Mechanical Engineering, BMS College of Engineering, Bengaluru, focusing on CMTI’s training programs and the CAAP Scheme. The interaction aimed to strengthen academic–industry collaboration, explore skill development opportunities, and enhance student engagement through structured training initiatives and collaborative programs.

TRAINING PROGRAMME ON "SMART MANUFACTURING AND INDUSTRY 4.0"

CMTI conducted a comprehensive two-day training program on Smart Manufacturing and Industry 4.0 from 19 to 20 January and 21 to 22 January 2026. The sessions were delivered by Mrs. Shishuma D. S. (STA-I) and her tam, providing participants with both theoretical insights and hands-on exposure to advanced manufacturing technologies. The program covered key topics including AI/ML applications and case studies, IIoT implementation for legacy and IoT-enabled modules, PLC fundamentals and programming, fluid power technology, pneumatic and hydraulic system components, industrial sensors and their applications, mechatronics-based automation, CNC machining operations, smart tool holders, smart metrology, reverse engineering, and industrial robotics with basic programming. Practical demonstrations, exercises, and laboratory visits enabled participants to gain real-world understanding of smart manufacturing practices. The training successfully enhanced participant awareness of Industry 4.0 technologies and their integration into modern manufacturing environments, supporting skill development aligned with emerging industrial needs.

TRAINING PROGRAMME ON "GEAR ENGINEERING"

CMTI conducted a comprehensive two-day training programme on Gear Engineering during 19–20 January 2026. The sessions were delivered by Mr. Anantha Padmanabha K. M. (Group Head, Scientist-F) and his team, providing participants with both theoretical understanding and practical exposure to gear technology.The programme covered types of gears, gear design principles and standards, classification and applications, design of spur, helical, and worm gears with worked examples, gearbox design, gear correction methods, material selection and heat treatment. Participants also attended demonstrations on the Kisssoft gear module, visits to the metrology laboratory, insights into gear manufacturing and quality assurance practices, general gearbox maintenance, and a visit to a gear manufacturing unit, followed by a concluding session. The training enhanced participants' knowledge of modern gear design, manufacturing, and inspection practices, supporting skill development aligned with industrial requirements.

UPCOMING TRAINING PROGRAMS

- "Scanning Electron Microscopy", Course Code: 2305, on 13 February 2026.
  Click for more information
- "Advanced Laser Machining", Course Code: 4202, on 20 February 2026.
  Click for more information
- "Advanced Surface Finishing and Characterization Techniques", Course Code: 4205, on 20 February 2026.
  Click for more information
- "CMM & Machine Tool Calibration", Course Code: 4106, from 26 – 27 February 2026.
  Click for more information

Editorial Team

Dr. Debeshi Dutta - 8670958202
Dr. Anusha Epparla - 7382413886
Ms. Pallavi M
write to us: directoroffice@cmti.res.in

Central Manufacturing Technology Institute
Tumkur Road, Bengaluru - 560022,
Karnataka, India Tel: +91-80-23372048
E-mail : director@cmti.res.in
Website : www.cmti.res.in