

## **TECHNICAL REPORTS (TR) 2021-22**

Non-isothermal CFD Simulation of Solid Hydrogen Flow Through the Single-screw Extruder  
VISHAL GUPTA, RANJANA GANGRADEY, SAMIRAN S. MUKHERJEE, SHASHIKANT VERMA, J. MISHRA, PARESH PANCHAL and PRATIK A. NAYAK

IPR/TR-623/2021 (April 2021)

Thermo-fluid MHD Analysis of a Circular U-bend  
A. PATEL and R. BHATTACHARYAY

IPR/TR-624/2021 (April 2021)

Development of LabVIEW based Software for Interfacing of High Speed Camera in Machine Vision Application  
V. CHAUDHARI, SURAJ GUPTA and MANOJ KUMAR

IPR/TR-625/2021 (April 2021)

Thermal Conductivity Measurement of Thermal Insulation Materials using Transient Hot-wire Technique  
MAULIK PANCHAL, HARSH PATEL, ATIK MISTRY and PARITOSH CHAUDHURI

IPR/TR-626/2021 (April 2021)

Thermal Analysis of Braking System for Pulsed Alternator

A. AMARDAS and RAMBABU SIDIBOMMA

IPR/TR-627/2021 (April 2021)

Preliminary Design of a Permanent Magnet based Electromagnetic Pump for Pb-Li Applications

S. SAHU, R. BHATTACHARYAY and A. PRAJAPATI

IPR/TR-628/2021 (May 2021)

Design and Implementation of FPGA-SoC based Timing Measurement System for Thomson Scattering Laser Sub-system

V. CHAUDHARI, JINTO THOMAS, KIRAN PATEL, PABITRA MISHRA, NEHA SINGH and H. C. JOSHI

IPR/TR-629/2021 (May 2021)

Design and Development of W-band Trans-Receiver System

VARSHA SIJU and S. K. PATHAK

IPR/TR-630/2021 (May 2021)

System Requirement Document of 27kV, 105A and 14kV, 20A (Dual output), 3115kW HVDC Power Supply for 1.5MW RF Generator of ICRH System

BHAVESH R. KADIA, SUNIL KUMAR and ICRH GROUP

IPR/TR-631/2021 (June 2021)

System Requirement Document for -70kV, 40AHVDC Power Supply of LHCD System

SAIFALI SHARMA, P. K. SHARMA and LHCD GROUP

IPR/TR-632/2021 (June 2021)

Applications of Scanning Raman Spectrophotometer system Procured at FCIPT

SOORAJ K. P., MUKESH RANJAN and ALPHONSA JOSEPH

IPR/TR-633/2021 (June 2021)

Development of Stainless Steel-Aluminum Dissimilar Circular Pipe Joints using Modified Milling Machine

DILIP C. RAVAL, KUSH P. MEHTA, RAJMAL JAIN, HARDIK VYAS and ZIAUDDIN KHAN

IPR/TR-634/2021 (June 2021)

Design, Fabrication and Functional Testing of the Magnetic Probe Movement System (MPMS)  
A. PRAJAPATI, A. PATEL and R. BHATTACHARYAY  
IPR/TR-635/2021 (June 2021)

FEA Investigations of the Support Structures for the Magnet Test Facility  
HEMANG AGRAVAT, MAHESH GHATE, ARVINDKUMAR TOMAR, DHAVAL BHAVSAR, UPENDRA PRASAD and R. SRINIVASAN  
IPR/TR-636/2021 (June 2021)

Development of Simple Tight Aspect Ratio Machine Assembly (STARMA) for Basic Plasma Studies  
JAGABANDHU KUMAR, T. RAM, K. K. AMBULKAR, C. SINGH, A. L. THAKUR, P. R. PARMAR, C. G. VIRANI, SAIFALI SHARMA, V. VASAVA, B. ARAMBHADIYA, V. D.RAULJI, P. K. SHARMA and D. RAJU  
IPR/TR-637/2021 (July 2021)

System Requirements Document for 80K Cryopump  
NARESH CHAND GUPTA  
IPR/TR-638/2021 (July 2021)

Design, Simulation, Fabrication & Testing of LIM for EML  
PRASADA RAO P., ARVIND KUMAR, ANANYA KUNDU, ANKUR JAISWAL, VILAS CHAUDHARI, SIDIBOMMA RAMBABU, Y. S. S. SRINIVAS and E. RAJENDRAKUMAR  
IPR/TR-639/2021 (July 2021)

Design of a Pneumatically Operated Bellow Sealed Valve for High Temperature Liquid Metals  
A. PRAJAPATI, S. SAHU, DEEPAK SHARMA and R. BHATTACHARYAY  
IPR/TR-640/2021 (July 2021)

RCS Reduction of a Metallic Target using Plasma Panel  
HIRAL B. JOSHI, N. RAJAN BABU, AGRAJIT GAHLAUT, BISHAL DAS, RAJESH KUMAR and ASHISH R. TANNA  
IPR/TR-641/2021 (August 2021)

Numerical Studies for Bath Cooled Heat Exchangers in Sub-Cooled LN<sub>2</sub> for Cryogenic Cooling of Gaseous Helium  
HEMANG AGRAVAT, ARVINDKUMAR TOMAR, MAHESH GHATE, UPENDRA PRASAD and R. SRINIVASAN  
IPR/TR-642/2021 (August 2021)

Assembly, Testing, and Performance Validation of Vacuum System for Magnet Test Facility  
MAHESH GHATE, DHAVAL BHAVSAR, F. S. PATHAN, DEVEN KANABAR, MAILA PARMESH, UMESH PAL, ARVIND TOMAR, NAYAN SOLANKI, ARUN PANCHAL, HEMANG AGRAVAT, GATTU RAMESH, ARUN PRAKASH, PRASHANT THANKEY, KALPESH DHANANI, UPENDRA PRASAD and R.SRINIVASAN  
IPR/TR-643/2021 (August 2021)

Validation of 2D DIC Technique with Strain Gauge for Cantilever Displacements  
KEDAR BHOPE, MAYUR MEHTA, SUNIL BELSARE, TUSHAR PATEL, NIKUNJ PATEL and SAMIR KHIRWADKAR  
IPR/TR-644/2021 (August 2021)

Installation and Testing of Automatic Capacitance and Tan Delta Testing Facility  
C. DODIYA, A. MAKWANA, U. PRASAD and R. SRINIVASAN  
IPR/TR-645/2021 (August 2021)

Pneumatic Calibrator for Heterodyne Interferometer  
KIRAN PATEL, UMESH NAGORA, H. C. JOSHI and SURYA PATHAK  
IPR/TR-646/2021 (September 2021)

Design and Analysis of a 100 W at 77 K Gamma-type Reverse Stirling Cycle based Cryocooler for Cryopumps  
ROHAN DUTTA, VISHAL GUPTA, HEMANG S. AGRAVAT, PARESH PANCHAL, SAMIRAN MUKHERJEE and RANJANA GANGRADEY  
IPR/TR-647/2021 (October 2021)

Development of an Experimental Setup to Measure Emissivity at Low Temperature: Role of Low and High Emissive Heat Radiators  
AVIJIT DEWASI, RANJANA GANGRADEY, SAMIRAN SHANTI MUKHERJEE, VISHAL GUPTA, ROHAN DUTTA, JYOTI SHANKAR MISHRA, PARESH PANCHAL and PRATIK A. NAYAK  
IPR/TR-648/2021 (October 2021)

Performance Testing of Cryo Distribution with Cryogenics Valves and other Instruments for 80 K Thermal Shields of Large Magnet Test Facility (MTF) at IPR  
ROHIT PANCHAL, DEVEN KANABAR, ARVIND TOMAR, MAHESH GHATE, PANKAJ VARMORA, HEMANG AGRAVAT, DHAVAL BHAVSAR, PIYUSH RAJ, BHADRESH PARGHI, ARUN PANCHAL, ANEES BANO, FIROZ KHAN, UPENDRA PRASAD, VIPUL TANNA and R. SRINIVASAN  
IPR/TR-649/2021 (November 2021)

Inventory and Tritium Residence Time in Indian Lithium Titanate Blanket  
CHANDAN DANANI, DEEPAK AGGARWAL, MANOJ WARRIER and R. SRINIVASAN  
IPR/TR-650/2021 (November 2021)

Recent Upgrade and Modification in 24.8MHz ICRH DAC Software  
RAMESH JOSHI, H. M. JADAV, MANOJ PARIHAR, SUNIL KUMAR and HIGH POWER ICRH SYSTEMS DIVISION  
IPR/TR-651/2021 (December 2021)

Fabrication of Chemical Compatibility Test Set Up For High-Temperature Interaction Study between  $\text{Li}_2\text{TiO}_3$  and Indian RAFMS  
VRUSHABH LAMBADE, AROH SHRIVASTAVA and PARITOSH CHAUDHURI  
IPR/TR-652/2021 (December 2021)

Sticking Coefficient for Xenon Gas on Charcoal Coated and Bare Copper Panel at 20 Kelvin in Pumping Environment  
PRATIK A. NAYAK, RANJANA GANGRADEY, SAMIRAN MUKHERJEE, JYOTI SHANKAR MISHRA, PARESH PANCHAL and VISHAL GUPTA  
IPR/TR-653/2021 (December 2021)

Real-time Density Feedback Control on the ADITYA-U Tokamak  
KIRAN PATEL, UMESH NAGORA, H. C. JOSHI, SURYA PATHAK, K. A. JADEJA, KAUSHAL PATEL, CHETAN VIRANI, ANKIT PATEL, R. L. TANNA, ROHIT KUMAR, SUMAN AICH, JOYDEEP GHOSH and ADITYA-U TEAM  
IPR/TR-654/2021 (December 2021)

Conceptual Design of Large Cryopumping Test Facility (LCTF)  
SAMIRAN MUKHERJEE, HEMANG S. AGRAVAT, PARESH PANCHAL, VISHAL GUPTA, PRATIK NAYAK, JYOTI SHANKAR MISHRA and RANJANA GANGRADEY  
IPR/TR-655/2021 (December 2021)

Multi-pulse Operation of 42GHz Gyrotron

BRAJ KISHORE SHUKLA, JATIN PATEL, HARSHIDA PATEL, DHARMESH PUROHIT, SHARAN DILIP, MAHESH KUSHWAH, K. G. PARMAR, HARDIK MISTRY, LAXMIKANT RAO, VIPAL RATHOD, N. P. SINGH, P. K. ATREY and RAJAN BABU

IPR/TR-656/2022 (January 2022)

Preliminary Design of a Multichannel Test Mock up for Thermofluid MHD Experimental Studies

A. PATEL, S. VERMA, A. SARASWAT, R. BHATTACHARYAY and A. PRAJAPATI

IPR/TR-657/2022 (January 2022)

Design and Development of PLC Based Offline Impedance Matching System for ICRH Experiment

RAMESH JOSHI, H. M. JADAV, MANOJ PARIHAR, KISHORE MISHRA, DHARMENDRA RATHI, ATUL VARIA, SUNIL KUMAR and HIGH POWER ICRH SYSTEMS DIVISION

IPR/TR-658/2022 (January 2022)

Design and Development of Broadband UV and Temperature Sensor Probe for Plasma Sterilization

KUSHAGRA NIGAM and G. RAVI

IPR/TR-659/2022 (January 2022)

Temperature Monitoring System for Large Volume Plasma Device Upgrade

D. KHANDURI, R. SUGANDHI, P. K. SRIVASTAVA, A. BALAJI, U. PALLAPOTHU, A. ADHIKARI, A. K. SANYASI and L. M. AWASTHI

IPR/TR-660/2022 (February 2022)

Installation and Performances of Temperature Sensors during Cryogenic Testing of Magnet Test Facility

PIYUSH RAJ, PANKAJ VARMORA, DEVEN KANABAR, BHADRESH PARGHI, HEMANG AGRAVAT, ANEES BANO, MONI BANUDHA, MAHESH GHATE, YOGENDRA SINGH, CHIRAGKUMAR DODIYA, UPENDRA PRASAD and R.SRINIVASAN

IPR/TR-661/2022 (February 2022)

Simplifying IP Address Management

SHARAD JASH, ARVIND M. SINGH, VIJAY K. PATEL, CHINTAN SUTARIA, PADMINI JADEGA and R. GANESH

IPR/TR-662/2022 (February 2022)

Detailed Engineering, Erection, Testing and Commissioning of 11kV, 1600KVAR, Automatic Power Factor Correction (APFC) System at 132kV IPR Substation

CHANDRA KISHOR GUPTA, SUPRIYA NAIR, PRAKASH PARMAR and CHIRAG BHAVSAR

IPR/TR-663/2022 (February 2022)

Collision Cross Sections and Swarm Parameters of Charged Species in Air

SHAHRUKH BAREJIA, JYOTI AGARWAL, R. SRINIVASAN and S. JAKHAR

IPR/TR-664/2022 (February 2022)

Recovery of Electromagnetic Coils Insulation under Varying Conditions in ADITYA-U Tokamak

ROHIT KUMAR, J. GHOSH, R. L. TANNA, SUMAN AICH, TANMAY MACWAN and ADITYA-U TEAM

IPR/TR-665/2022 (February 2022)

Liquid Nitrogen Distribution System for NBI Cryopumps with a Phase Separator

CH. CHAKRAPANI, B. SRIDHAR, B. CHOKSI, KARISHMA Q., V. PRAHLAD, SANJAY L. PARMAR, NILESH CONTRACTOR, VIJAY VADHER, L. K. BANSAL, PARESH PATEL and U. K. BARUAH

IPR/TR-666/2022 (February 2022)

EPICS OPC for SST-1 Cryogenics Plant

V. B. PATEL, A. L. SHARMA, H. H. CHUDASMA, H. MASAND, I. A. MANSURI, J. J. PATEL, M. K. BHANDARKAR, P. GADDAM, P. N. PANCHAL, R. J. PATEL, T. S. RAO, V. L. TANNA and K. MAHAJAN  
IPR/TR-667/2022 (March 2022)

Measurement of Electron Temperature by Soft X-Ray Diagnostics in Aditya-U Tokamak

A. ADHIYA, S. PUROHIT, M. K. GUPTA, P. KUMARI, R. RAJPAL, R. TANNA, J. GHOSH and ADITYA TEAM  
IPR/TR-668/2022 (March 2022)

Performance Testing of the Liquid Nitrogen Cooled Sorption Cryopump for Application in SST-1 Tokamak

VISHAL GUPTA, RANJANA GANGRADEY, SAMIRAN S. MUKHERJEE, JYOTI SHANKAR MISHRA, PRATIK A. NAYAK, PARESH PANCHAL, VIPUL L. TANNA, YUVAKIRAN PARAVASTU, DILIP C. RAVAL, ZIAUDDIN KHAN, SIJU GEORGE, ATUL GARG, SRIKANTH L. N., AVIJIT DEWASI, SHASHI KANT VERMA, ROHAN DUTTA and HEMANG AGRAVAT  
IPR/TR-669/2022 (March 2022)