TEQIP SUMMER INTERNSHIP 2018

भारतीय प्रौद्योगिकी संस्थान हैदराबाद

Indian Institute of Technology Hyderabad

SUBMITTED BY :
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NAME : TANMAY KHARE

BRANCH : MECHANICAL ENGINEERING

YEAR : 2nd YEAR

COLLEGE : JABALPUR ENGINEERING COLLEGE , JABALPUR , M.P.

FACULTY ADVISOR AT IITH : Dr. SYED NIZAMUDDIN KHADERI

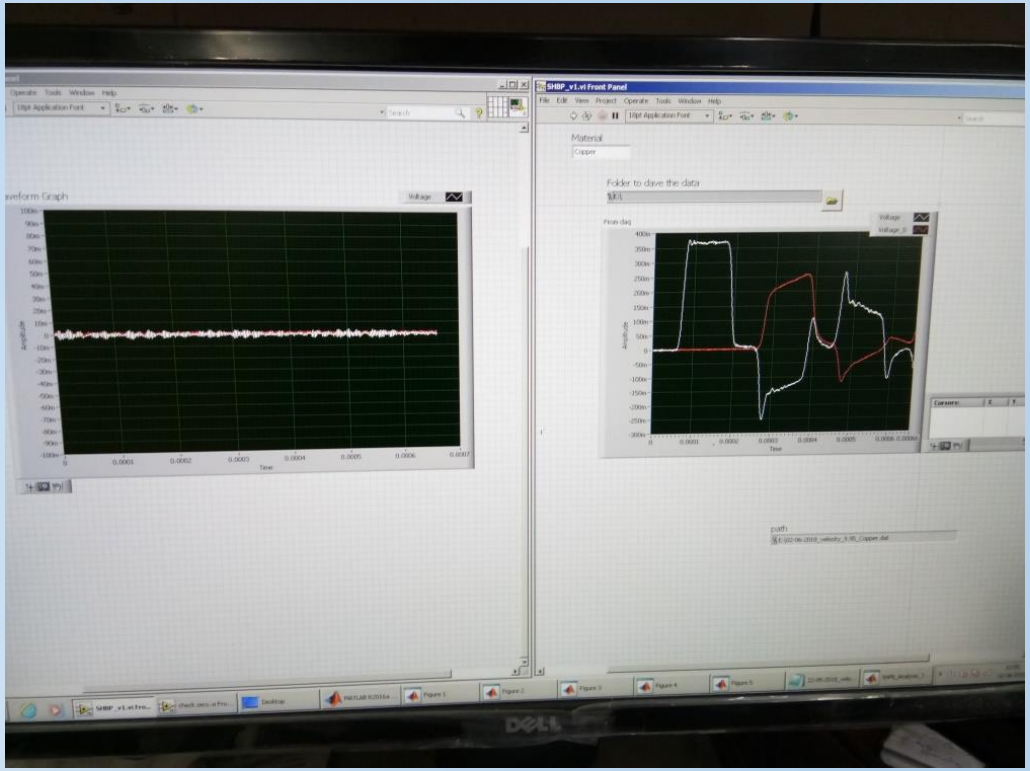
RESEARCH SUBJECT : STUDY OF SPLIT HOPKINSON PRESSURE BAR TEST APPARATUS AND MAKING A MAKE SHIFT GAS GUN USING FIRE EXTINGUISHER

CORE SUBJECT RELATED TO THE RESEARCH : SOLID MECHANICS AND STRENGTH OF MATERIALS

DURATION OF INTERNSHIP : 1 MONTH

FINAL OUTCOME : 1) PERFORMED SHPB TEST ON STAINLESS STEEL
2) PLOTTED STRESS-STRAIN GRAPH ON MATLAB FOR THE SAME
3) SUCCESSFULLY COMPLETED AND TESTED THE “MAKE SHIFT GAS GUN”

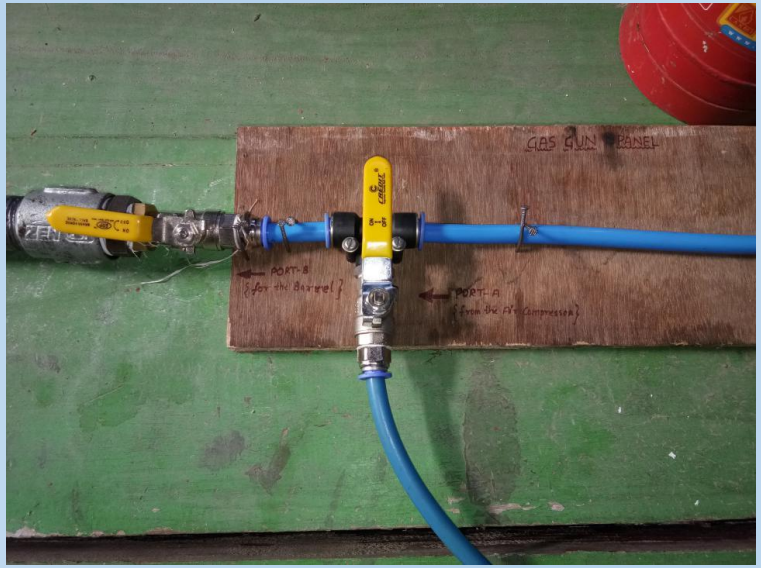
- **SHPB TEST :** This test is conducted to determine the material properties under varying strain rates . The design or performance assessment of a component or structure requires accurate knowledge of the elastic and inelastic deformational and strength properties of the material , varying with both temperature and time. This is where this apparatus comes into picture .



- The apparatus we are using here at our lab uses a Compressed Air Gas gun to shoot a striker bar towards the Incident Bar. This generates an impact stress wave in the incident bar which propagates through the specimen and then to the transmitter bar as the specimen is placed in between the two bars. The barrel of the gas gun, the pressure bars (incident and transmitter)and the specimen , all are axially aligned to each other.

- The image at the right shows the apparatus at the lab, the figure at the right shows the gaph plotted on MATLAB

- **MAKE SHIFT GAS GUN :**
- In our research we made a Compressed Air Gas Gun using fire extinguisher
- We used a 5kg capacity emty fire extinguisher
- Maximum safe acting pressure for the apparatus = 15bar



- The above images shows :
  1) the Gas Gun
  2) the Air Compressor Used
  3) The gas gun panel which we mounted on the plywood board


Thank you