



**BMS COLLEGE OF ENGINEERING**  
**B.S. Narayan Centre for Structural Integrity Studies**  
(Established under TEQIP-III project – March 2020)  
Bull temple road, Bengaluru – 560019

**DETAILED PROGRESS REPORT- 2021-22**

**1. ABOUT THE FACILITY:**

The B.S. Narayan Centre for Structural Integrity and Studies was established under TEQIP-III Project, March-2020 and is equipped with an MTS Landmark Servo-hydraulic UTM.

MTS LANDMARK SYSTEMS integrate the latest in MTS servo-hydraulic innovation, versatile flextest® controls, proven MTS application software, and a complete selection of accessories to provide highly accurate and repeatable static and dynamic testing across the material testing continuum.

The Test system can be used to perform,

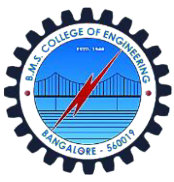
- Quasi-static Tensile & Compression tests
- High Cycle & Low Cycle Fatigue tests
- Fatigue Crack Growth Analysis (FCGR)
- Fracture Toughness Tests - KIC & JIC

Machine specifications:

- A maximum daylight distance of 1500 mm in between the top and bottom wedge grips.
- Dynamic Actuator stroke of +/- 75mm (Net 150mm) in displacement mode.
- 250kN and 25kN variant force transducers/ load cells, Extensometer and COD Gauges.
- Gripping Jaws for Flat (Max. Thickness of 25.4 mm) and round specimens (Max. Dia of 19.8 mm)
- Fracture Mechanics Clevis grips with pin assembly.
- A compression platen and a 3 – point bend fixture used in determination of compressive and flexural properties of various materials including concrete. **(Annex-1)**

**2. Records Maintained:**

- **Consultancy details:** This report contains the consultancy details of the users which includes information such as the data sheet along with the invoice and the payment details. This report throws light on the revenue generated at the BSNCSIS facility.
- **Machine utilization details:** The users are requested to fill the data sheet where information such as the test conditions, nature of materials, No. of specimens; are mentioned along with the total machine run time hours. Through this report we can ascertain the number of Research scholars/ Faculty/ Students benefited by the facility.
- **Design and Fabrication of fixtures:** This report contains the details of design and fabrication of various fixtures which includes the machinery used for fabrication and design approach/ method.



**BMS COLLEGE OF ENGINEERING**  
**B.S. Narayan Centre for Structural Integrity Studies**  
(Established under TEQIP-III project – March 2020)  
Bull temple road, Bengaluru – 560019

**DETAILED PROGRESS REPORT- 2021-22**

- **Workshop/ Mini-Small Project report:** This report contains the details of Workshop/ Projects- from a detailed schedule with the related permissions along with a brief summary of the event with feedback forms filled by the participants who attended.
- **Machine Run-Time log book:** Run-time log book is maintained to document the machine utilization in hours along with the user details. Through this document we can analyze the completion time/ time taken for completion of particular testing on an average run hour basis.
- **BSNCSIS Test-Ledger:** The ledger contains the information of the user, nature of testing, number of samples and dimensional details of the specimen, gripping pressure at the wedge grips/ jaws along with the testing results. Every user is given a unique CSIS ID.
- **Budgetary Stock-Ledger:** Keeping note on the budget sanctioned to the facility and recording the stock of various consumables and non-recurring items and documentation of the invoice bills.

**3. SPENDING:**

- An advance amount of ₹ 20,000/- was sanctioned to the facility on DEC-2020 for procurement of raw materials for testing and the details of the procured materials along with their invoice number has been entered in the stock ledger. **(Annex-2)**
- ₹ 1,41,600/- (incl. GST) was spent Calibration of six sensors including 250kN, 25 kN load cells, LVDT, extensometer and two COD gages. **(Annex-3)**

**4. WORKSHOPS/ TRAINING PROGRAMME CONDUCTED:**

- A Two-day workshop on “Determination of Fatigue Crack growth rate (FCGR) and Fracture Toughness ( $K_{IC}$ ) of Mild steel and Aluminum alloys”, 30-Nov & 1-DEC 2020. **(Annex-4)**
- Fatigue characterization and facility walkthrough during the One-week workshop on “Advanced Manufacturing” organized by the department of Mechanical Engineering, BMSCE, 1-5 MARCH, 2021. **(Annex-5)**
- Laboratory demonstration and hands-on experiment in performing fatigue tests for M.Tech., MSE 1<sup>st</sup> SEM students 10- APRIL, 2021. **(Annex-6)**
- Training on  $J_{IC}$  Fracture toughness by MTS, 27,28- OCT, 2021. **(Annex-7)**
- Training on Digital Image Correlation (DIC) by Josts Engineering, 12 - NOV 2021. **(Annex-8)**
- Training on IR Camera by FLIR, 02-FEB 2022. **(Annex-9)**



**BMS COLLEGE OF ENGINEERING**  
**B.S. Narayan Centre for Structural Integrity Studies**  
(Established under TEQIP-III project – March 2020)  
Bull temple road, Bengaluru – 560019

**DETAILED PROGRESS REPORT- 2021-22**

**5. CONSULTANCY:**

The facility has generated an income of ₹ 2,40,967/- (**Annex-10**) by benefiting a total of **68** users, (**19 External, 49 internal**) including faculty, research scholars, UG and PG students. (**Annex-11,12**)– (Feb 2022) \*.

**6. OTHER ACCOMPLISHMENTS:**

- Consultancy project of 8 Lakh rupees is approved by Dr. Aruna Kumara P.C., Professor, Department of Mechanical Engineering, MSRIT. (**Annex-13**)
- Report on FCGR and KIC – Submitted to Dr. G. Giridhar, Prof., Dept. of Mechanical Engineering BMSCE. (**Annex-14**)
- Tensile Test report of 3D printed Glass Fiber/ Onyx composite - CSISID 35 – Submitted to Asst. Prof. Arjun C.C. & Asst. Prof. Srikanth N.V., Dept. of Mechanical Engineering, BMSCE. (**Annex-15**)
- BSNCSIS Facility user satisfaction survey was conducted and their valuable feedback were collected and documented for performance assessment. (**Annex-16**)
- Number of students affiliated to the facility for the on-going academic project. (**Annex-17**)