Report of Educational Outreach program by BIS in SVNIT, Surat on 07 October 2023

The Educational Outreach Program was organized by BIS at Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat on October 7, 2023, driven by the collaborative spirit fostered under the MoU between BIS and SVNIT. The BIS team comprising of Sh. S K Singh, Sc.F & Head (SUBO), Sh Sanjiv Maini, Sc.F & Head (MTD), Smt Arul Sathya, Sc.D, SROL, Sh, Dharambeer, Sc.D, TXD, Sh. Sai Chandra, Sc.B, SUBO & Sh Priyanshu Sharma, Sc.B, LITD organized the day-long workshop. The program was inaugurated by Dr. C. D. Modhera Dean, SVNIT. More than 50 faculty members from different departments participated in the workshop along with many students.

The program focused not only on standards collaboration but also on the invaluable contribution of academia through Research and Development (R&D). Engaging discussions centered on emerging standards in various sectors and how academia can play a pivotal role in shaping and contributing to these benchmarks through active Research & Development (R&D). The program emphasized the importance of academic research in the standards-setting process. Witnessing the enthusiasm of the faculty members and students for both learning and contributing to standardization was truly inspiring. The attendees appreciated the initiatives taken by BIS in these lines.

Some of the ToRs prepared by the members for potential R&D projects during the program are as follows:

1. **Title of the project: Decentralized efficient Standards for Urine and blackwater in natural bodies**

Scope: To reduce the load on the STPs

Expected Deliverables: Proper treatment of wastewater & Urine for the release in the natural bodies as per Standard

Timeline and Method of Progress Review:

1. Literature review
2. Design of decentralized sewage system for separation of Urine & wastewater
3. Treatment of both streams with non-conventional methods such as Dio-electrochemical system
4. Preparation of Standard of effluent of Urine & Waste water

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2. **Title: Categorized sports Infrastructure facilities for various level of competitions (selection trials)**

Scope: To specify Categorized sports Infrastructure facilities for various level of competitions (selection trials)

Expected Deliverables: Will provide standard & Neutral conditions for all athletes for performing in selection.

Research Methodology:

1. Weather conditions study
2. Composition of facilities study

<u>During the group session on draft standard formulation, some of the drafts prepared by the faculty members are given below:</u>

1. Title: Effect harmonics on the performance of the ceiling fan

Background:

a) IS 374: 2019

b) Rational: The existing Standard does not cover the performance of ceiling fan under supply voltage harmonics

c) As the ceiling fans can be fed with PV Inverter output it may contain voltage harmonics. This this harmonics will produce noise, vibration and overheating.

Scope: Testing of fan with voltages with lot of harmonics content.

Research Methodology:

1. Fan is fed with PV Inverter
2. Effect of vibration, noise, heating, will be managed on cycle of continuous running of 24 Hrs.

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2. Title: The development of tolerance limit far ultimate strength of HYSD bars

Background: Technical committee - CED 54

Revision of IS 1786: 2008: To ensure ductile behavior during earthquake due to huge over strength, the system may behave brittle. Hence, the ultimate tensile strength must have to be specific.

Scope: To conduct the tensile strength of HYSD bars and propose an upper Tolerance limit for ultimate strength.

Expected Deliverables: To propose Tolerance limit for tensile strength

Research Methodology:

1. Review of Literature
2. Identification of Gap Areas
3. Experimental Program – material testing using different tests of bars
4. Proposing the tolerance limit

3. Title: Requirements of the Behind The Ear (BTE) Hearing Aids

Scope: This standard covers the requirements of the Behind The Ear (BTE) hearing aid which will be used for the persons with hearing impairments, it also applies to equipment's such as preamplifiers, passive networks and power supplies

Requirements:

a. Chemical
    i. Material used should be as per the ISO standard of BPA free
b. Physical
    i. Conformal with the standard India Ear
    ii. No sharp edges
c. Mechanical
    i. Waterproof
d. EMC requirements
    i. Should be free from Electro Magnetic Interferences
    ii. Low power

Testing Methods:

a. EMI/EMC testing
b. Acoustics testing
c. IP rating

Sampling and Inspection:

a. For a batch of 100 machines, one machine will be randomly tested and should pass all the testing methods.
b. In case the sample fails in any of the test. The testing will be applied for all the remaining machines from the batch.

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4. Title of the Project: Energy efficient fans low noise

Scope: a. Energy consumption of motors

b. Air flow/discharge

Expected Deliverables: Development of project on different class of fan

Research Methodology:

a. Study of noise motor
b. Air flow study in various room

Many vibrant suggestions, inputs & feedbacks were received from the participants during the Group discussion session, as listed below:

- A Course in B. Tech level or short term course related to BIS.
- Literature review/ proposal development in PG Course.
- Training programmes for standards formulation & drafting
- Student seminar on one day or two days' workshop and related exercises with students.
- Faculty Induction programme
- Vocation training for students, with certificates on completion
- Industry visits & interaction for M Tech /Ph. D Scholars to learn more about standards.
- Students should be encouraged to choose subjects related to standardization as projects/ Dissertation topics.
- Workshops may be organized in the institute with Joint Faculty from BIS & SVNIT guiding Ph. D scholars on Dissertations related to standards.
- Internship programs
- Lab exposure visits
- Awareness Programmes
- Research scholars (Ph. D) may have internship or collaboration with BIS
- Research facility collaboration for research scholars for advance research
- R&D , Internship, Training, Expertise talk/training in specific field
- Activities should be planned and scheduled in advance and it can be put in academic calendar
- Creating collaboration of faculty experts in the field with industry practising
- Special training to people getting seed fund to start their business in relevant field
- Joint project for standard improvement study project and R&D project.
- Training program should be designed for basic science too. So that we can explore more possibilities for working together.
- Internship/Training/Placement for students.
- SMART standards (machine readable/interpretable/understandable)
- Introduction of a new course related to data analytics which will benefit both organizations
- QR codes on products which will show the procedure to conduct tests, etc. [Usually helpful for first time users]