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BUREAU OF INDIAN STANDARDS

MINUTES

Committee	Day	Date	Time	Venue
19 th Meeting of Industrial Process Measurement And Control, ETD 18 Sectional Committee	Wednesday	15-11-2023	11:30 AM	Virtual

Chairperson: Shri Rajiv Gupta

Member Secretary: Shri Ashok Kumar

Attendance:

Sl. No.	Organization	Member Name	Email
1.	Engineers India Limited, New Delhi	Shri Rajiv Gupta	rajivra1212@gmail.com
2.	Bharat Heavy Electrical Limited, New Delhi	Shri Punit Pratap Singh	punit@bhel.in
3.	Bureau of Energy Efficiency, New Delhi	Dr. Alka Bharti	alka.bharti90@beeindia.gov.in
4.	CSIR - National Physical Laboratory, New Delhi	Dr. Sanjay Yadav	syadav@nplindia.org
5.	Electronics Corporation of India Limited, Hyderabad	Shri Hardev Singh	hardev@ecil.co.in
6.	Engineers India Limited, New Delhi	Shri Anindyo Ray	a.ray@eil.co.in
7.	Finder India Private Limited, Delhi	Shri Ashish Manchanda	a.manchanda@findernet.com
8.	Fluid Control Research Institute, Palakkad	Shri M. Suresh	m.suresh@fcriindia.com
9.	MN Dastur and Company Private Limited, Kolkata	Shri Debasish Ghosh	debasish.g@dastur.com
		Shri Dhiman Chandra Dhar	dhiman.d@dastur.com
		Shri Arijit Sarkar	sarkar.a@dastur.com
10.	Oil and Natural Gas Corporation Limited, New Delhi	Shri C.R. Raju	crraju@gmail.com
11.	Rockwin Flowmeter India Private Limited, Chennai	Shri Shankar Mathur	shankar@rockwin.com
12.	Steel Authority of India Limited (SAIL), New Delhi	Shri Ashish Jha	ashishjha@sail.in
13.	Vijayesh Instruments Private Limited, Pune	Shri Vishwas Kale	vijayesh@vsnl.net

Item 0 General

Shri Rajiv Gupta, Chairperson, ETD 18 welcomed all the members present in the meeting. He expressed his appreciation for the newly approved guidelines for research and development projects by BIS. He also suggested that members recommend additional subjects for R&D pertaining to the formulation or revision of standards based on the committee's scope in the future.

Item 1 CONFIRMATION OF THE MINUTES OF THE LAST MEETING

The Committee formally approved the minutes of 18th meeting of Industrial Process Measurement and Control Sectional Committee, ETD 18, held on 9th June.

Item 2 IDENTIFICATION OF RESEARCH & DEVELOPMENT PROJECTS FOR FORMULATION AND REVIEW OF STANDARDS

2.1 Member Secretary briefed the new "Guidelines for Research & Development Projects for Formulation and Review of Standards," stating that all committees are encouraged to adopt a research based approach in Standard formulation and propose research projects. The aim is to create well defined research documents to support the committee's decision-making. Moreover, since most of these small research projects will be awarded to academic institutions that have signed MoU with BIS, it would create awareness among colleges regarding standards.

2.2 The committee approved the following ToRs for Research and Development projects:

Sl. No.	Title
1	Revision of IS 2053 :1974 - Specification for thermocouple pyrometers.
2	Specification for thermocouples (Revision of IS 12579: 1988, IS 8018: 1976, IS 8784: 1987)
3	Direct reading pH meters (Revision of IS 4309: 1979, IS 6804: 1972, IS 2711: 1979)

The ToRs for the above mentioned R&D subjects are attached at Annex 1.

Item 3 Harmonization of Indian Standards with IEC

3.1 It was decided to align the following Indian Standards with the equivalent IEC standards and wide circulate them for the period of 2 Months. The documents will be finalized and sent for printing, in case no comments are received during the wide circulation period.

Sl. No.	IS No	Title	Equivalent IEC/Remark
1	IS 9080 (Part 4): 1981	Safety requirements in electro - Heat installations: Part 4 particular requirements for arc furnace installations	IEC 60519-4: 2021 Safety in installations for electroheating and electromagnetic processing - Part 4: Particular requirements for arc furnace installations
2	IS 10098: 1982	General requirements for electric infra - Red emitters for heating purposes	IEC 60240-1: 1992 Characteristics of electric infra-red emitters for industrial heating - Part 1: Short wave infra-red emitters
3	IS 12556: 1988	Specification for binary direct voltage signals for	IEC 60946: 1988 Binary direct voltage signals for process measurement and control systems

		process measurement and control systems	
4	IS 12579: 1988	Specification for base metal mineral insulated thermocouple cables and thermocouples	IEC 61515: 2016 Mineral insulated metal-sheathed thermocouple cables and thermocouples
5	IS 7728: 1984	Specification for analogue dc current signals for process control systems (First Revision)	IEC 60381-1: 1982 Analogue signals for process control systems. Part 1: Direct current signals
6	IS 9050 : 1979	Nominal dimensions of cylindrical machined graphite electrodes with threaded sockets and connecting pins for use in electric arc furnaces	IEC 60239:2005 Graphite electrodes for electric arc furnaces - Dimensions and designation

Item 4 Indian Standards under wide circulation

4.1 The committee decided to finalize the following wide circulated drafts as no comments were received during the wide circulation period:

SI. No	ETD 18 Doc No	Equivalent IEC
1.	Doc ETD 18 (22819) Revision of IS 10189 : Part 2 : Sec 1: 1993 Industrial-process control valves - Part 2-1: Flow capacity - Sizing equations for fluid flow under installed conditions	IEC 60534-2-1: 2011
2.	Doc ETD 18 (22822) Revision of IS 10215: 1982 Methods of tests for submerged - Arc furnaces	IEC 60683: 2011
3.	Doc ETD 18 (22817) Revision of IS 8493: 1977 Analogue DC voltage signals for industrial process measurement and control systems	IEC 60381-2: 1978
4.	Doc ETD 18 (22820) Revision of IS 11692: 1986 Methods of tests for electro - Slag remelting furnaces	IEC 60779: 2020

5.	Doc ETD 18 (22557) IS/IEC 61010-2-202: 2020 Safety requirements for electrical equipment for measurement control and laboratory use - Part 2-202: Particular requirements for electrically operated valve actuators	-
6.	Doc ETD 18 (22823) IS/IEC 60519-8: 2020 Safety in installations for electroheating and electromagnetic processing Part 8: Particular requirements for electroslag remelting furnaces	-
7.	Doc ETD 18 (22818) Revision of IS 7722: 1975 Analogue pneumatic signals for process control systems	IEC 60382: 1991
8.	Doc ETD 18 (22821) Revision of IS 12306: 1987 Methods of test for direct arc furnaces	IEC 60779: 2020
9.	Doc ETD 18 (22816) Revision of IS 13673 : Part 4: 1998 Expression of performance of electrochemical analyzers: Part 4 standard for measuring oxygen dissolved in water	IEC 60746-4: 2018
10.	Doc ETD 18 (22824) Revision of IS 13263: 1992 Test methods of plasma equipment for electroheat applications	IEC TS 60680: 2008

Item 5 Review of Published Standards for Revision/Reaffirmation

The Committee noted the information.

Item 6 PROGRAMME OF WORK

The Committee noted the information.

Item 13 DATE AND PLACE OF NEXT MEETING

Annex A

TERMS OF REFERENCE FOR R&D PROJECT

1. **Title of the project:** Revision of IS 2053: 1974 - Specification for Thermocouple pyrometers.

2. **Background:**

This standard covers the requirements and methods of tests for thermocouple pyrometers where the temperature indication is given by the emf of the thermocouple.

This research project aims to **review and update the existing Indian standard IS 2053:1974**. The research and development project focus on the improved accuracy and method of tests for thermocouple pyrometers and ensuring that the standard is in line with the current technological advancements and industry requirements. The revision of this standard will address any gaps, accuracy of the thermocouple pyrometers, and enhance the performance of thermocouple pyrometers in accordance with the present scenario.

3. **Scope for R&D:**

The project's scope encompasses a comprehensive study of the existing Indian standard IS 2053:1974, along with a literature survey to identify relevant advancements and updates in thermocouple pyrometers. It will also involve the study of improved accuracy, response time and overall performance, advanced material, current manufacturing and method used in thermocouple pyrometers. The research will primarily concentrate on the revision of the specification for thermocouple.

4. **Expected Deliverables:**

- a. A revised version of Indian standard IS 2053:1974, incorporating improved accuracy and test methods, relevant updates and advancements in line with current requirements.
- b. Documentation of the research findings, including an analysis of literature surveys, manufacturing facilities (MSMEs, startups, etc.), and tests methodologies.

- c. Recommendations for enhancing performance and accuracy of thermocouple pyrometers in the current scenario, based on the research conducted.

5. Research Methodology:

The project will involve the following research methodologies:

- a. Conduct an extensive literature survey to review previous studies, research papers, and relevant publications related to thermocouple pyrometers, standards, and technological advancements.
- b. Gather data through surveys, interviews, or questionnaires to assess the manufacturing facilities, current test methods, specifically focusing on MSMEs and startups involved in thermocouple pyrometers production.
- c. Analyze the collected data and identify gaps, shortcomings, and areas requiring improvement in the existing standard.
- d. Visit to at least two manufacturing units and a laboratory to understand the manufacturing processes and technologies in use for production and quality control.
- e. Propose necessary revisions and modifications to the standard, considering the research findings and industry best practices.
- f. Prepare a comprehensive report documenting the research methodology, findings, recommendations, and the revised version of the standard.
- g. Preparation of the Draft document.
- h. Submission of the final project document

6. Criteria for Identification of Proposer to conduct Research work:

- Proposer shall be a technologist with experience in manufacturing/testing of thermocouple pyrometers.
- Proposer shall be a member of the Sectional Committee or the academic institution and universities having MoU with BIS.

Note: The acceptance of proposal is subjected to the approval of Sectional Committee and Screening Committee of BIS based on the BIS norms.

7. Timeline and Method of Progress Review:

The review will be carried out in each month along with consultation of other experts if required. The literature review after 1 month, the first draft after 4 months and the final draft along-with report at the end of 6 months.

8. Support BIS will Provide:

BIS will provide access to latest editions of standards, magazines, Research Journals etc. required for the project.

TERMS OF REFERENCE FOR R&D PROJECT

1. **Title of the project:** Specification for Thermocouple (Revision of IS 12579: 1988, IS 8018: 1976 and IS 8784: 1987)

2. **Background:**

Following three Indian standards specify the requirements of thermocouple cables and elements.

- a) IS 12579 specifies the requirements for mineral insulated thermocouple cables and mineral insulated thermocouples having one pair of base-metal conductors for general industrial applications.
- b) IS 8018 covers the requirements and the test methods of test for platinum/rhodium alloy wires and platinum wires used as elements of the thermocouples.
- c) IS 8784 specifies the requirements and tests for thermocouple compensating cables of the twin-core and multi-core type.

The research project aims to **review and update these Indian standards** as per the current technological advancements and industry requirements. The revision of these standard will address any gap areas, advancement in thermocouple compensating cables, elements and mineral insulated thermocouples.

3. **Scope for R&D:**

The project's scope encompasses a comprehensive study of the existing Indian standards along with a literature survey to identify relevant advancements and updates in thermocouple compensating cables and elements.

a) Scope for R&D in IS 12579

It will involve the study of current dimensions, sheath material, tolerances of outside diameter, upper temperature limits used in thermocouple cables and electrical requirements and type tests of mineral insulated thermocouples.

b) Scope for R&D in IS 8018

The study of dimensions, THERMO-EMF details and type tests for platinum and platinum alloy wires for thermocouple elements.

c) Scope for R&D in IS 8784

The study of specifications of various types of twin-core and multi-core thermocouple compensating cables, recommended conductor material for cables and application of various types of thermocouple compensating cables.

4. Expected Deliverables:

- d. The revised version of IS 12579, IS 8018 and IS 8784, incorporating all the finding mentioned in scope for R&D, relevant updates and advancements in line with current requirements.
- e. Documentation of the research findings, including an analysis of literature surveys, manufacturing facilities (MSMEs, startups, etc.), and tests methodologies.

5. Research Methodology:

The project will involve the following research methodologies:

- i. Conduct an extensive literature survey to review previous studies, research papers, and relevant publications related to thermocouple compensating cables, mineral insulated thermocouples and thermocouple elements.
- j. Gather data through surveys, interviews, or questionnaires to assess the manufacturing facilities, current test methods, specifically focusing on MSMEs and startups involved in thermocouple compensating cables, mineral insulated thermocouples and thermocouple elements.
- k. Analyze the collected data and identify gaps, shortcomings, and areas requiring improvement in the existing standard.
- l. Visit to at least two manufacturing units and a laboratory to understand the manufacturing processes and technologies in use for production and quality control.
- m. Propose necessary revisions and modifications to the standards, considering the research findings and industry best practices.
- n. Prepare a comprehensive report documenting the research methodology, findings, recommendations, and the revised version of the standards.
- o. Preparation of the Draft document.
- p. Submission of the final project document

6. Criteria for Identification of Proposer to conduct Research work:

- Proposer shall be a technologist with experience in manufacturing/testing of thermocouple.
- Proposer shall be a member of the Sectional Committee or the academic institution and universities having MoU with BIS.

Note: The acceptance of proposal is subjected to the approval of Sectional Committee and Screening Committee of BIS based on the BIS norms.

7. Timeline and Method of Progress Review:

The review will be carried out in each month along with consultation of other experts if required. The literature review after 1 month, the first draft after 4 months and the final draft along-with report at the end of 6 months.

8. Support BIS will Provide:

BIS will provide access to latest editions of standards, magazines, Research Journals etc. required for the project.

TERMS OF REFERENCE FOR R&D PROJECT

1. **Title of the project:** Specification and method of measurement of Direct reading pH meter (Revision of IS 4309: 1979, IS 6804: 1972 and IS 2711: 1979)

2. **Background:**

Following three Indian standards outline the specifications and measurement methods for Direct Reading pH Meters:

- d) IS 4309 prescribes the conditions and the detailed procedures for the measurement of performance characteristics of direct reading pH meter.
- e) IS 6804 specifies the dimensions and constructional details and performance characteristics of glass electrode used with direct reading pH meter.
- f) IS 2711 covers requirements for pH meters for laboratory use

The research project aims to **review and update these Indian standards** as per the current technological advancements and industry requirements. The revision of these standard will address any gap areas, advancement in direct reading pH meter.

3. **Scope for R&D:**

The project's scope encompasses a comprehensive study of the existing Indian standards along with a literature survey to identify relevant advancements and updates in direct reading pH meter.

d) Scope for R&D in IS 4309

It will involve the study of calibrating pH scale, test for input current and methodologies for measurement of direct reading pH meters.

e) Scope for R&D in IS 6804

The study of classification of pH and temperature ranges, electromotive efficiency with respect to the pH and temperature ranges, calibration of glass electrode for direct reading

pH meter.

f) Scope for R&D in IS 2711

The study of classification of instruments according to their accuracy, temperature compensating devices, electrical safety and accuracy of direct reading pH meter.

4. Expected Deliverables:

- f. The revised version of IS 4309, IS 6804 and IS 2711, incorporating all the finding mentioned in scope for R&D, relevant updates and advancements in line with current requirements.
- g. Documentation of the research findings, including an analysis of literature surveys, manufacturing facilities (MSMEs, startups, etc.), and tests methodologies.

5. Research Methodology:

The project will involve the following research methodologies:

- q. Conduct an extensive literature survey to review previous studies, research papers, and relevant publications related to direct reading pH meter.
- r. Gather data through surveys, interviews, or questionnaires to assess the manufacturing facilities, current test methods, specifically focusing on MSMEs and startups involved in direct reading pH meter
- s. Analyze the collected data and identify gaps, shortcomings, and areas requiring improvement in the existing standard.
- t. Visit to at least two manufacturing units and a laboratory to understand the manufacturing processes and technologies in use for production and quality control.
- u. Propose necessary revisions and modifications to the standards, considering the research findings and industry best practices.
- v. Prepare a comprehensive report documenting the research methodology, findings, recommendations, and the revised version of the standards.
- w. Preparation of the Draft document.
- x. Submission of the final project document

6. Criteria for Identification of Proposer to conduct Research work:

- Proposer shall be a technologist with experience in manufacturing/testing of direct reading pH meter.
- Proposer shall be a member of the Sectional Committee or the academic institution and universities having MoU with BIS.

Note: The acceptance of proposal is subjected to the approval of Sectional Committee and Screening Committee of BIS based on the BIS norms.

7. Timeline and Method of Progress Review:

The review will be carried out in each month along with consultation of other experts if required. The literature review after 1 month, the first draft after 4 months and the final draft along-with report at the end of 6 months.

8. Support BIS will Provide:

BIS will provide access to latest editions of standards, magazines, Research Journals etc. required for the project.