**कार्यवृत्त**

**MINUTES**

17th MEETING OF

INDUSTRIAL AUTOMATION SYSTEMS AND ROBOTICS SECTIONAL COMMITTEE,

PGD 18

**14:00 Hrs – 17:00 Hrs | Friday, 22 March 2024**

**Venue: Hybrid Meeting, Manak Bhawan, New Delhi or through WebEx**

**Meeting link:** [**https://bismanak.webex.com/bismanak/j.php?MTID=mf68530059311de3166603a4b6728871f**](https://bismanak.webex.com/bismanak/j.php?MTID=mf68530059311de3166603a4b6728871f)



**भारतीय मानक ब्यूरो**

**मानक भवन, 9 बहादुर शाह जफर मार्ग**

**नई दिल्ली – 110002**

**BUREAU OF INDIAN STANDARDS**

**MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG**

**NEW DELHI - 110002**

|  |  |  |
| --- | --- | --- |
| **MEETING** | **DATE & TIME** | **VENUE** |
| 17th meeting of Industrial Automation Systems and Robotics Sectional Committee, PGD 18 | 14:00 Hrs – 17:00 Hrs | Friday, 22 March 2024 | Meeting Link: <https://bismanak.webex.com/bismanak/j.php?MTID=mf68530059311de3166603a4b6728871f> Meeting No.: 2519 622 9331Password : APt2R9peZ89 (27827973 from video systems) |

**CHAIRMAN:** Shri Manoj Belgaonkar, GM (Regulations, Standards and Quality Management), Siemens India Limited, Mumbai

**MEMBER SECRETARY**: Shri Kundan Giri, Scientist-C/ Deputy Director, PGD, BIS, New Delhi

**MEMBERS PRESENT**

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No** | **Name of representative** | **Name of the Organization** | **Contact details** |
|  | Shri Yuva Raj Nitin | Bhabha Atomic Research Center, Radiation Medicine Centre, Mumbai | yuvrajnitinbarc@gmail.com  |
|  | Dr. Amit Thakur | Bhabha Atomic Research Centre, Mumbai | thakur@barc.gov.in  |
|  | Shri Amaren P Das | Bhabha Atomic Research Centre, Mumbai | apdas.2035@britatom.gov.in  |
|  | Shri Yellapa | Bharat Dynamics Limited, Hyderabad | caddne.bdl@bdl-india.in  |
|  | Shri K Ganesh Kumar | Bharat Heavy Electrical Limited, New Delhi | kkganesh@bhel.in  |
|  | Shri Prashant Katkar | Bosch Rexroth India Limited, Ahmedabad | prashant.katkar@boschrexroth.co.in  |
|  | Shri Varad N Acharya | Bosch Rexroth India Limited, Ahmedabad | varad.acharya@boschrexroth.co.in  |
|  | Shri Dip Narayan Ray | CSIR - Central Mechanical Engineering Research Institute, Durgapur | dnray@cmeri.res.in  |
|  | Shri S Nagarajan | Defence Bio-Engineering and Electromedical Laboratory, Ministry of Defence, Bengaluru | nagarajans.debel@gov.in  |
|  | Shri Gurvinder Singh Virk | Endoenergy Systems Private Limited, Mohali | gsvirk@endoenergy.com  |
|  | Shri Gulshan Kumar | IPSS Sail, New Delhi | gulshank2001@gmail.com  |
|  | Shri Anirban Guha | Indian Institute of Technology Bombay, Mumbai | anirbanguha@iitb.ac.in  |
|  | Prof. Vineet Vashista | Indian Institute of Technology Gandhinagar | vineet.vashista@iitgn.ac.in  |
|  | Shri Vibhor Pandhare | Indian Institute of Technology Indore | vibhorpandhare@iiti.ac.in  |
|  | Shri Vijay Narayanasamy | Perfint Healthcare Private Limited, Chennai | vijaydeivan@perfinthealthcare.com  |
|  | Shri Pugal Puhazhendi | Perfint Healthcare Private Limited, Chennai | pugal@perfinthealthcare.com  |
|  | Shri Rajendran Menon | Rockwell Automation India Private Limited, Mumbai | ramenon@ra.rockwell.com  |
|  | Shri Yogesh Kamath | Siemens Limited, Mumbai | yogesh.kamath@siemens.com  |
|  | Shri Snehasis Banerjee | Tata Consultancy Services Limited, Mumbai | snehasis.banerjee@tcs.com  |
|  | Shri Tushar Baviskar | Tata Motors Limited, Pune | tushar.baviskar1@tatamotors.com  |
|  | Shri Amilineni Adithya | Tata Motors Limited, Pune | adithya.amilineni@tatamotors.com  |
|  | Shri Santhakumar Mohan | The Robotics Society of India, Chennai | santhakumar@iitpkd.ac.in  |
|  | Shri Yogesh Agarwal | Timetooth Technologies Private Limited, Noida | yogesh@timetooth.com  |
|  | Prof. M. Singaperumal | Personal Capacity | m.singaperumal@gmail.com  |

**Item 0. GENERAL**

* 1. **Welcome address by the Member Secretary**

Shri Kundan Giri, Scientist C & Member Secretary on behalf of Bureau of Indian Standards, welcomed the Chairman and all the members present in the meeting. He appraised the members about the recent reforms in Standards formulation in BIS. He explained the purpose of the meeting and clarified the goals of recent reform, performance index of the committee, mandatory attendance, R&D schemes and expectations from the members.

**0.2 Opening remarks by the Chairman**

Shri Manoj Belgaonkar, the Chairman of PGD 18, extended a warm welcome to all the esteemed members assembled for the meeting. He expressed his gratitude to the committee members for their presence and collaboration.

He emphasized the importance of collective effort and encouraged committee members to take up R&D projects, attend meetings of the sectional committte and give comments on the circulated P-drafts. He asked the members to take up R&D projects on upcoming standards. Drawing attention to the significance of the ISO documents currently in circulation through ballots, he urged members to scrutinize them meticulously. He highlighted that these standards would ultimately become the adopted Indian standards, underscoring the need for thorough review and consideration.

Concluding his remarks, the Chairman asked the Member Secretary to commence the proceedings of the meeting.

# Item 1 CONFIRMATION OF MINUTES OF THE LAST MEETING

Since no comments were received, the Committee confirmed the minutes of the 16th meeting of Industrial Automation Systems and Robotics Sectional Committee, PGD 18 held on 20th November 2023.

**Item 2 REFORMS IN THE PROCESS OF STANDARDISATION**

The Committee noted the information given in the agenda.

**Item 3** **STATUS REPORT ON THE ANNUAL ACTION PLAN 2023-24**

**Item 3.1 Carry Over Projects from 2022-23**

Nil

**Item 3.2 Standards Due for Review in 2023-24**

|  |  |  |  |
| --- | --- | --- | --- |
| **SN** | **IS No./ Title** | **Status before the meeting**  | **Decision of the committee**  |
| 1 | **IS 14662 : 2018/ISO 8373 : 2012**Robots and robotic devices - Vocabulary (First Revision) | The standard has been published as IS 14662 : 2024/ ISO 8373 : 2021 Robotics Vocabulary. The committee may please note. | The committee noted the information given in the agenda. |
| 2 | **IS 16608 : 2018/ ISO 13482 : 2014**Robots and robotic devices - Safety requirements for personal care robots | Follow-up email to Prof. M Singaperumal for review was sent on 16 January 2024 and reminder email was sent on 14 March 2024., response is awaited.Further, In the 6th meeting of ISO/TC 299 it was clarified that this will standard will not be subsumed in ISO 10218-2 but will continue as a standalone standard.  | The committee decided to reaffirm IS 16608 till the new version of ISO 13482 is published. |
| 3 | **IS 17192 (Part 1) : 2019/ISO 18646-1**Robotics - Performance Criteria and Related Test Methods for Service Robots Part 1 Locomotion for Wheeled Robots | The standard was reaffirmed. No further action is required. | The committee noted the information given in the agenda. |
| 4 | **IS 17193 : 2019 ISO/TS 15066 : 2016**Robots and Robotic Devices - Collaborative Robots | The standard was reaffirmed. No further action is required. | The committee noted the information given in the agenda. |
| 5 | **IS 14530 (Part 1) : 2019 ISO 10218-1 : 2011**Robots and Robotic Devices - Safety Requirements for Industrial Robots Part 1 Robots (First Revision) | The standards were wide circulated on 17-01-2024.Since no comments were received the committee may finalize the standard for sending to publication. | The committee finalized the document for publication as identical adoption of ISO 10218-1 : 2024. |
| 6 | **IS 14530 (Part 2) : 2019 ISO 10218-2 : 2011**Robots and Robotic Devices - Safety Requirements for Industrial Robots Part 2 Robot Systems and Integration (First Revision) | The standards were wide circulated on 17-01-2024.Since no comments were received the committee may finalize the standard for sending to publication. | The committee finalized the document for publication as identical adoption of ISO 10218-2 : 2024. |

**Item 3.3 Standards due for 2024-2025**

|  |  |  |  |
| --- | --- | --- | --- |
| **SN** | **IS No./ Title** | **Status before the meeting**  | **Decision of the committee**  |
| 1 | **IS 13547 (Part 1) : 2010/ISO 9409-1 : 2004**Manipulating industrial robots - Mechanical interfaces: Part 1 plates (Second Revision) | The current version of base standard is ISO 9409-1 : 2004. The committee may deliberate. | The committee decided to allocate ARP in the next meeting.  |
| 2 | **IS 13547 (Part 2) : 2010/ISO 9409-2 : 2002**Manipulating industrial robots - Mechanical interfaces: Part 2 shafts (First Revision) | The current version of base standard is ISO 9409-2 : 2002. The committee may deliberate. | The committee decided to allocate ARP in the next meeting. |
| 3 | **IS 14531 : 2005/ISO 9946 : 1999**Manipulating industrial robots - Presentation of characteristics (First Revision) | The current version of base standard is ISO 9946 : 1999. The committee may deliberate. | The committee decided to allocate ARP in the next meeting. |
| 4 | **IS 14533 : 2005/ISO 9283 : 1998**Manipulating industrial robots - Performance criteria and related test methods (First Revision) | The current version of base standard is ISO 9283 : 1998. The committee may deliberate. | The committee decided to allocate ARP in the next meeting. |
| 5 | **IS 14776 (Part 1) : 2000/ISO/TR 10314-1 : 1990**Industrial automation - Shop floor production: Part 1 reference model for standardization and a methodology for identification of requirements | The current version of base standard is ISO 10314-1 : 1990. The committee may deliberate. | The committee decided to allocate ARP in the next meeting. |
| 6 | **IS 14776 (Part 2) : 2000/lSO/TR 10314-2 : 1991**Industrial automation - Shop floor production: Part 2 application of the reference model for standardization and methodology | The current version of base standard is ISO 10314-2 : 1991. The committee may deliberate. | The committee decided to allocate ARP in the next meeting. |
| 7 | **IS 13450 (Part 4/Sec 1) : 2020/IEC 60601-4-1 : 2017**Medical Electrical Equipment Part 4 Guidance and Interpretation Section 1 Medical electrical equipment and medical electrical systems employing a degree of autonomy | The current version of base standard is IEC 60601-4-1 : 2017. The committee may deliberate. | The committee decided to allocate ARP in the next meeting. |
| 8 | **IS 17192 (Part 2) : 2020/ISO 18646-2:2019**Robotics - Performance Criteria and Related Test Methods for Service Robots Part 2 Navigation | The standards were wide circulated on 17-01-2024.Since no comments were received the committee may finalize the standard for sending to publication. |  The committee finalized the document for publication as identical adoption of 18646-2:2024. |
| 9 | **IS 17437 : 2020/ISO 19649 : 2017**Mobile Robots - Vocabulary | The current version of base standard is ISO 19649 : 2017. The committee may deliberate. | The committee decided to allocate ARP in the next meeting. |
| 10 | **IS/ISO 20140-3 : 2019**Automation systems and integration Evaluating energy efficiency and other factors of manufacturing systems that influence the environment Part 3: Environmental performance evaluation data aggregation process | The current version of base standard is ISO 20140-3 : 2019. The committee may deliberate. | The committee decided to allocate ARP in the next meeting. |
| 11 | **IS/ISO 20140-1 : 2019**Automation systems and integration Evaluating energy efficiency and other factors of manufacturing systems that influence the environment Part 1: Overview and general principles | The current version of base standard is ISO 20140-1 : 2019. The committee may deliberate. | The committee decided to allocate ARP in the next meeting. |

**Item 3.4 Standards published before the Year 2000 -** Nil

**Item 3.5** The committee noted the status of projects under **Standards National Action Plan 2023-27**

**Item 3.6 New Work Items Under Development**

|  |  |  |  |
| --- | --- | --- | --- |
| **S No.** | **IS No./ Title** | **Status before the meeting**  | **Decision of the committee**  |
| 1. | Indian Standard for Exoskeleton robots | Panel on exoskeleton has been formed. Proposal for subject on which standard is to be developed is awaited. | It was decided to hold a seminar/webinar along with the next meeting.The following speakers were idenfied for seminar/webinar:* Dr. Shantipal Ohol on Gate pattern for exoskeletons
* Dr. Vineet Vashishta, IIT Gandhinagar
* Shri Girish Mudgal, M/s Timetooth India Pvt. Ltd.
* Prof. Vineet Vashista
* Prof. Ashish Mathur
* Mr Pugal & Mr Vijay, M/s Perfint Healthcare

The following subjects were identified for the lecture:* + - 1. Introduction to exoskeleton
			2. Use cases
			3. Test Scenarios
			4. Infrastructure available for testing
			5. Use of Artificial Intelligence in exoskelton robots
 |

**Item 3.7 Any Other Projects**

|  |  |  |  |
| --- | --- | --- | --- |
| **S No.** |  **Title** | **Status before the meeting** | **Decision of the committee**  |
|  | **PGD 18 (22173)  (ISO 8000-140)**Data Quality Part 140 Master data Exchange of characteristic data Completeness | These finalized Documents have been sent to Print. | The Committee noted the information given in the agenda. |
|  | **PGD 18 (22177)  (ISO 8000-82 : 2022)**Data Quality Part 82 Data quality assessment Creating data rules |
|  | **PGD 18 (22178)  (ISO 8000-81 : 2021)**Data Quality Part 81 Data quality assessment Profiling |
|  | **PGD 18 (22180)  (ISO 8000-60 : 2017)**Data Quality Part 60 Data quality management Overview |
|  | **PGD 18 (22158)  (ISO 8000-1 : 2022)**Data Quality Part 1: Overview |
|  | **PGD 18 (22159)  (ISO 8000-2 : 2022)**Data Quality Part 2: Vocabulary |
|  | **PGD 18 (22165)  (ISO 8000-62 : 2022)**Data Quality Part 62: Data quality management: Organizational process maturity assessment: Application of standards relating to process assessment |
|  | **PGD 18 (22179)  (ISO 8000-65 : 2020)**Data Quality Part 65 Data quality management Process measurement questionnaire |
|  | **PGD 18 (22168)  (ISO 8000-66 : 2021)**Data Quality Part 66: Data quality management: Assessment indicators for data processing in manufacturing operations |
|  | **PGD 18 (22169)  (ISO 8000-100 : 2022)**Data Quality Part 100: Master data: Exchange of characteristic data: Overview |
|  | **PGD 18 (22175)  (ISO 8000-120 : 2016)**Data Quality Part 120 Master data Exchange of characteristic data Provenance |
|  | **PGD 18 (22181)  (ISO 8000-130 : 2016)**Data Quality Part 130 Master data Exchange of characteristic data Accuracy |
|  | **PGD 18 (22176)  (ISO 8000-311 : 2012)**Data Quality Part 311 Guidance for the application of product data quality for shape PDQ-S |
|  | **PGD 18 (22161)  (8000-8 : 2015 )**Data Quality Part 8: Information and data quality: Concepts and measuring |
|  | **PGD 18 (22163)  (ISO 8000-61 : 2016)**Data Quality Part 61: Data quality management: Process reference model |
|  | **PGD 18 (22166)  (ISO 8000-63 : 2019)**Data Quality Part 63: Data quality management: Process measurement |
|  | **PGD 18 (22167)  (ISO 8000-64 : 2022)**Data Quality Part 64: Data quality management: Organizational process maturity assessment: Application of the Test Process Improvement method |
|  | **PGD 18 (22171)  (ISO 8000-110 : 2021)**Data Quality Part 110: Master data: Exchange of characteristic data: Syntax semantic encoding and conformance to data specification |
|  | **PGD 18 (22172)  (ISO 8000-115 : 2018)**Data Quality Part 115: Master data: Exchange of quality identifiers: Syntactic semantic and resolution requirements | The standard has been published as IS/ISO 8000-115 : 2018. |
|  | **PGD 18 (22174)  (ISO 8000-116 : 2019)**Data Quality Part 116: Master data: Exchange of quality identifiers: Application of ISISO 8000-115 to authoritative legal entity identifiers | The standard has been published as IS/ISO 8000-116 : 2019. |
|  | **PGD 18 (22170)  (ISO 8000-150)**Data Quality Part 150: Data quality management: Roles and responsibilities | The standard has been published as IS/ISO 8000-150 : 2022. |

**Item 4 COMPOSITION OF THE SECTIONAL COMMITTEE**

* 1. The Committee noted the information given in the agenda.
	2. The Committee noted the information given in the agenda.

**Item 5 POSITION OF WORK**

**5****.1** The Committee noted the information given in the agenda.

**5****.2** The Committee noted the information given in the agenda.

**Item 6 INTERNATIONAL ACTIVITIES**

**6.1** The Committee noted the information given in the agenda.

**6.2** **Membership of PGD 18 in International Committees**

**6.2.1** The Committee noted the memberships in ISO/TC 184 given in the agenda.

**6.2.2** The membership status of India (BIS) on the ISO/ TC 299 and its sub-Committees (SC) was reviewed by the committee. It was decided to nominate the following experts as members of the given working groups of ISO/TC 299:

|  |  |  |
| --- | --- | --- |
| **Name of Expert**  | **Email Id** | **ISO Working Group** |
| Shri Kundan Giri, BIS | Kundan.giri@bis.gov.in | ISO/TC 299/WG 2  |
| Dr Yuvraj Nitin, BARC | yuvrajnitinbarc@gmail.com  | ISO/TC 299/WG 8 |
| Dr Vineet Vasishtha, IIT Gandhinagar | vineet.vashista@iitgn.ac.in | ISO/TC 299/WG 8  |
| Dr Pugal Puhazhendi, Perfint Health Care | pugal@perfinthealthcare.com | ISO/TC 299/WG 8  |
| Mr Rajendran Menon, Rockwell Automation | ramenon@ra.rockwell.com | ISO/TC 299/WG 8  |

**6.3** The committee noted the list of ISO ballots circulated since 20 November 2023 for voting.

**6.4 Future Meetings Scheduled for ISO/TC 184 and TC 299**

The committee noted the information given in the agenda and recommended that the following delegation will attending the upcoming meetings through video conferencing:

|  |  |  |
| --- | --- | --- |
| **Date** | **Meeting of**  | **Approved members of Indian Delegation for attending the meeting** |
| 12 May 2024 | ISO/TC 184/SC4 | Shri Amit Thakur, BARC;Shri Yogesh Kamath, Siemens India;Shri Chandrakant Bhardwaj, Workcell Solutions Pvt. Ltd;Shri Kundan Giri, BIS  |
| 17 June 2024 | ISO/TC 184/SC5 | Shri Manoj Belgaonkar, Seimens India  |

**6.5** **Hosting of the next meeting of ISO/TC 299/WG 6 in India.**

The committee note the information in the agenda and expressed gratitude for the preliminary acceptance from ISO/TC 299 WG 6 to host its forthcoming meeting in India. Following this, the committee recommended to submit a proposal for hosting the next meeting of ISO/TC 299/WG 6 in India, subject to receiving formal approval from BIS management, as well as clearance from MHA and MEA.

During deliberations, it was noted that the anticipated attendance for this Working Group meeting would range between 35 to 40 participants, spanning a minimum duration of three days. To enhance the event's impact, a proposal was made to organize a concurrent seminar or conference focusing on the theme of modularity in robotics.

Highlighting India's evolving role in the realm of robotics, despite not being a dominant player in manufacturing, it was emphasized that promoting modular robots within the country could offer significant economic advantages. This assertion is particularly pertinent given the nascent stage of modular robot production, which requires fewer resources compared to traditional robotics, thus presenting a promising avenue for economic development.

**6.6 Debriefing of the last meeting of ISO/TC 299 attended by Shri Yuvraj Nitin and Shri Kundan Giri in Lake Buena Vista, Orlando from 29-31 Jan 2024**

The committee noted the information given in the agenda. Shri Yuvraj Nitin and Shri Kundan Giri explained the major decision taken in the meeting and the action required to be taken by the committee.

# Item 7 RESEARCH PROJECT TO BE TAKEN UP FOR INCLUSION OF EMPIRICAL DATA AND INSIGHTS

# The Committee noted the information given in the agenda.

# Item 8 DATE AND PLACE OF NEXT MEETING

# The committee delibrated on the annual calendar for the Sectional Committee meetings and decided to hold 3 meetings in the upcoming Financial Year 2024-25. The tentative dates and locations of the meetings are given below:

|  |  |  |  |
| --- | --- | --- | --- |
| S.N. | Meeting No | Date | Venue |
| 1. | 18th meeting | 13-14 June 2024 | Yet to be decided |
| 2. | 19th Meeting | Nov 2024 | Chennai |
| 3.  | 20th Meeting | Feb 2025 | Delhi |

# Item 9 ANY OTHER BUSINESS – NIL

--------------------------- The meeting ended with a thanks to the Chair ----------------------------