Terms of Reference for R&D Project

(Hydraulic Gates & Valves Sectional Committee, WRD 12, Water Resources Department, BIS)

1. Title of the Project: Study of Automation of Radial Gates

2. Background:

Radial gates are critical components in hydraulic systems for controlling the flow of water in dams. Automation of these gates can lead to increased efficiency.

There is a lack of standardization of the approach to the automation of radial gates. This study aims to bridge this gap by developing guidelines for the automation of radial gates.

3. Objective:

3.1 The project's primary objective is to perform a comprehensive study on radial gate automation processes and technologies. This includes gathering insights from both primary and secondary sources.

3.2 Emphasis will be placed on compiling information on current practices, and operational challenges associated with automation of Radial Gates.

3.3 The project aims to systematically analyse and synthesize this information to understand the prevailing trends in Radial Gates Automation.

3.4 This information collection and analysis will serve as the Basic framework for the future development of guidelines and Indian standards.

4. Scope:

4.1 An extensive study of existing literature including guidelines related to radial gates automation, focusing on their design, technology used, and application, research papers, journals, existing standards, and applicable regulations.

4.2 Visits of manufacturing facilities for investigation of specific aspects such as the design, processes used for data collection, control mechanisms, communication protocols, sensors, actuators, etc.

4.3 Field visits to radial gate installations to identify the need, operational challenges and information on best practices in real-world settings with specific reference to automation of these installations.

4.4 Identification and engagement with stakeholders like Regulatory Bodies, Researchers, and Academic Institutions.

4.5 Comparative analysis of different Radial Gates Automation technologies, Processes and applications to identify best practices.

4.6 Gathering user feedback to assess performance, reliability, and potential areas for automation or improvement in current Automated Radial Gates Applications.

5. Research Methodology (In accordance with Item 4):

5.1 Review of Existing Guidelines: Conduct a comprehensive review of existing guidelines, standards, research, and technologies available related to the automation of Radial Gates.

5.2 Data Collection: Gather data relevant to Radial Gates Automation like technical specifications, processes used, control mechanisms, etc.

5.3 Manufacturing Facility Visits: Visit at least 3 manufacturing facilities of Radial Gates to gather insights on the existing technology and challenges with automation.

5.4 Project Site Visits: Visit at least 3 project sites with Radial Gates to gather insights on the performance, efficiency, issues faced and potential for automation.

5.5 Stakeholder Engagement: Contact and engage with users, and other stakeholders such as Regulatory bodies, R&D Institutions, and manufacturers, and experts in the field of automation and hydraulics through seminars or webinars for comprehensive information gathering and feedback through a structured questionnaire.

5.6 Documentation: Compile the findings, analysis, and recommendations into comprehensive reports and documents.

6. Deliverables (In accordance with Item 4):

A comprehensive final report enclosing the following:

- **Comprehensive Study Report:** A detailed report encompassing all research findings, including reviews of existing literature, guidelines, and standards.

- **Analysis of Manufacturer and Stakeholder Engagement:** Insights gathered from field visits and interactions with manufacturers, users, regulators, and other stakeholders.

- **Comparative Analysis:** A comparative study of various Radial Gates Automation Technologies and applications, highlighting best practices.

7. Timeline and Method of Progress Review:

(Timeline is from the date of the award of the project)

S. No.	Stage	Timeline (Cumulative)
1	Report on Literature Review	60 Days
2	Stakeholder Engagement and visit to manufacturer and project sites	120 Days
3	First Draft	135 Days
4	Final Draft along-with report	150 Days

Interim review shall be carried out every 45 days.

8. Support from BIS:

BIS will provide access to the latest (Indian and International Standards) editions of standards for the project.

9. Member Secretary & Sectional Committee:

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