MUHAMMED HASHID

Ph.D., IIT Roorkee,

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Web of Science ResearcherID: AAX-2826-2020

Scopus ID: 56916062600

AREAS OF RESEARCH INTEREST

- Hydraulics of Water Diversion Structures
- Hydropower
- Hydraulic Structures
- Computation Fluid Dynamics (**CFD**)
- Fluvial Hydraulics (Flow Hydrodynamics and Turbulence characteristics)
- Water Resources Engineering

Current Designation

Designation: Assistant Professor

Institution: **Maulana Azad National Institute of Technology (NIT Bhopal) Bhopal, India**

Date of Joining: 04/01/2024 to present

Educational Qualifications

Degree	Specialization	Institute	University	Year
B-Tech	Civil Engineering	Mar Athanasius College of Engineering, Kothamangalam, Kerala, India	Mahatma Gandhi University (MG University), Kerala, India	2007-2011
M-Tech	Civil Engineering (Hydraulics Engineering)	Indian Institute of Technology Roorkee, Roorkee, India	Indian Institute of Technology Roorkee, Roorkee, India	2012-2014
PhD	Civil Engineering (Hydraulics Engineering)	Indian Institute of Technology Roorkee, Roorkee, India	Indian Institute of Technology Roorkee, Roorkee, India	2014-2020

Ph.D. in Civil Engineering (2020)

Thesis title: Critical Submergence for Multiple Water Intakes

Supervisor: Prof. Zulfequar Ahmad

Institution: Indian Institute of Technology Roorkee, Roorkee, India

Date of Joining: 19th July 2014

Date of Defence: 30th January 2020

***Abstract*:** Insufficient water cover at an intake causes the generation of free surface vortices which significantly affects the discharge capacity of the water intake. The submergence of an intake at which the tail of an air core vortex just reaches the intake is termed as critical submergence. The research proposed a design criterion for Multiple Intake Structure under approach flow condition for the first time. The main objective of the study is to propose a method for the prediction of critical submergence for lateral dual square shaped intakes in open channel flow based on experimental findings. Efforts were made to study the effect of potential parameters like intake Froude number, approach Froude number, size of intakes, sill height of intakes, clear spacing between the intakes, intake Reynolds number and Weber number on the critical submergence of the dual intakes. A functional relationship for the prediction of critical submergence is also developed from the analysis of data obtained from the experimentation. The present study also evaluated the scope of Computation Fluid Dynamics (CFD) based numerical modelling for the computation of flow at critical submergence of lateral dual intakes. Critical submergence for dual intakes were computed using 3D multiphase CFD model and the results were validated with the experimental results.

M.Tech in Civil Engineering (2014)

Specialization: Hydraulics Engineering,

Institution: Indian Institute of Technology Roorkee, Roorkee, India

Dissertation: Critical Submergence of Bellmouth Intake under Uniform Flow

Abstract: Critical submergence of lateral circular intake with bellmouth transition in open channel flow was studied both experimentally and analytically. The concept of potential flow theory was used to propose an analytical solution for the prediction of critical submergence. The effect of potential parameters on the critical submergence was identified. A functional relationship for the computation of critical submergence was also proposed and validated with experimental results.

B.Tech in Civil Engineering (2011)

University: Mahatma Gandhi University (MG University), Kerala, India

Institution: Mar Athanasius College of Engineering, Kothamangalam, Kerala, India

Dissertation: Water Diversion and Supply Network

***Abstract*:** The main objective of this study was to propose a water diversion and supply system for the residents of remote tribal areas of Vellaramkuttu, Kothamangalam, Kerala. The project aimed to attain sustainable supply of safe drinking water using the available head from the geography of the location.

Technical Higher secondary examination (THSE)-class xii (2006)

Board: Board of Higher Secondary Examination, Government of Kerala

Institution: Technical Higher Secondary School (IHRD), Muttom, Kerala.

High School (SSLC)-2004

Board: Secondary School Leaving Certificate Examination, General Education Department, Government of Kerala.

School: Sri Vivekananda Vidyasadan English Medium High School, Adimaly, Kerala

Experience

1. **Designation**: Assistant Professor

Institution: Centre of Excellence in Water Management, MANIT, Bhopal, India

2. Designation: Post-Doctoral Fellow

Institution: Department of Civil Engineering, *Indian Institute of Technology Bombay*, India

Project: Experimental and Numerical study of Submerged Water Intake Structures

Project in charge: Prof. Eldho T. I

Period of Employment: 21/02/2021 to till present **(2 years and 9 Months)**

3. Designation: Adhoc Project Fellow

Institution: Department of Civil Engineering, *Indian Institute of Technology Roorkee*, India

Project: 1×660 MW UPRVUNL Panki TPS Extension

(Experimental and CFD based numerical study on CW pump sump model for 1×660 MW UPRVUNL Panki Thermal Power Station Extension)

Project in charge: Prof. Z. Ahmad

Period of Employment: 01/07/2020 to 28/09/2020 **(3 Months)** **Total : 3 years**

Research Publications

Journal Papers (6 Papers)

1. Hashid, M., Eldho, T. I. (2023). Effect of Intake Pipe Blockage on the Critical Submergence for Lateral Dual Intakes. ***Journal of Hydraulic Research (IAHR),*** 61(4), 573-582**.** https://doi.org/10.1080/00221686.2023.2232763 **(IF*: 2.3)**

2. Hashid, M., Hussain, A; Ahmad, Z. (2023). Numerical Study for the Computation of Critical Submergence for Side Circular Intake under Uniform Flow. ***Canadian Journal of Civil Engineering***, 50(9), 790-803. https://doi.org/10.1139/cjce-2021-0554. (**IF*: 1.4**)

3. Hashid M, Eldho TI (2023). Numerical Simulation of Air-core Surface Vortex at Critical Submergence for Dual Horizontal Intakes. ***Journal of Fluids Engineering (ASME)***, 145: 071203-1-15. https://doi.org/10.1115/1.4056997 (**IF*: 2**)

4. Hashid, M., Ahmad, Z. (2022). Critical submergence for horizontal dual water intakes under perpendicular uniform approach flow**.** ***Journal of Hydraulic Engineering (ASCE***); 148(10): 04022020-1-13. https://doi.org/10.1061/(ASCE)HY.1943-7900.0002016 **(IF*: 2.4)**

5. Hashid, M., Hussain, A., Ahmad, Z. (2021). Critical Submergence for side circular intake with and without bellmouth transition. ***Journal of Hydraulic Research (IAHR)***; 59(1): 136-147. https://doi.org/10.1080/00221686.2020.1744749 **(IF*: 2.3)**

6. Hashid, M., Hussain A., Ahmad, Z. (2015). Discharge characteristics of lateral circular intakes in open channel flow. ***Flow Measurement and Instrumentation***; 46 Part A: 87-92. http://dx.doi.org/10.1016/j.flowmeasinst.2015.10.005 **(IF*: 2.2)**

7. Hashid, M., Eldho, T. I. (2023). Investigation on Turbulence Characteristics and sub-surface vorticity on the withdrawal capacity of Dual Hydraulic Intakes under approach flow. ***Computers and Fluids*** **(Under Review)**

International Conference Papers

1. Hashid, M., Eldho, T. I. (2023). Effect of Intake Pipe Protrusion on the Flow Characteristics of Hydraulic Intake Structures in Group. HYDRO 2023 INTERNATIONAL, 28th International Conference on Hydraulics, Water Resources and River Engineering, Warangal India, Dec 21-23, 2023

2.Hashid, M., Eldho, T. I. (2022). Critical Submergence for Lateral Dual Intakes under the Influence of Intake Protrusions- A CFD Study. ***39th IAHR World Congress, Granada, Spain,*** 19-24 June 2022, page 2358-2365**.** doi://10.3850/IAHR-39WC2521716X20221085

3. Shariq, A., Hashid, M., Hussain, A. and Ahmad, Z (2020). Energy Dissipation for Flow over the Gabion Weir**.** ***1st IAHR YPN Congress***, (Online) 17-18 November 2020, page 192-193.

4. Ahmad, Z., Hashid, M. (2020). Experimental and Numerical Study of Critical Submergence for Dual Intakes. ***8th IAHR ISHS*** **2020**, Santiago, Chile, page 1-10. DOI: 10.14264/uql.2020.601

5. Hashid, M., Ahmad, Z. (2018). Critical submergence for dual hydraulic intakes**. International Dam Safety Conference** 2018; 23-24 January 2018, Thiruvananthapuram, India: 381-395.

6. Hashid, M., Ahmad, Z. (2017). Critical Submergence for Water Intakes. Proceedings of the ***37th IAHR World Congress*** August 13 – 18, 2017, Kuala Lumpur, Malaysia, page 1230-1237. ISSN 1562-6865 (Online) - ISSN 1063-7710 (Print)

7. Hashid, M., Hussain A., Ahmad, Z. (2015). Flow Characteristics of Side Circular Bell Mouth Intakes in Open Channels. Proceedings of ***HYDRO 2015*** International Conference; 17-19 December; Roorkee, India, page 1-7.

8. Hussain, A., Hashid, M., Ahmad, Z. (2015). Experimental Study on Spilling Jet Through Lateral Square Orifice, Proceedings of ***HYDRO 2015*** International Conference; 17-19 December; Roorkee, India, page 1-8.

9. Hashid, M., Hussain A., Ahmad, Z. (2014). Analytical Approach for the Critical Submergence for Horizontal Intakes in Open Channel Flows. Proceedings of 19th International Conference on Hydraulics, Water Resources, Coastal and Environmental Engineering, ***HYDRO 2014*****.** December 18-20, Bhopal, India page 532.

*****JCR Impact Factor: 2022 Journal Citation Reports (Clarivate Analytics, 2022)

Peer-Reviewer

- Reviewer for ***Flow Measurement and Instrumentation***
- Reviewer for ***Ships and Offshore Structures***
- Reviewer for ***ISH Journal of Hydraulic Engineering***
- Reviewer for ***Arabian Journal of Geosciences***
- Reviewer for ***Journal of the Institution of Engineers (India): Series A***

MEMBERSHIP OF PROFESSIONAL BODIES

- **Vice President – IAHR India YPN**
- International Association for Hydro - Environment Engineering and Research (**IAHR**) – (**Membership No. – 55055**)
- Indian Society for Hydraulics **(ISH)** – **Life Member (LM-1188)**
- **ORCID ID**: https://orcid.org/0000-0002-4251-1488
- **Web of Science ResearcherID**: AAX-2826-2020
- **Scopus ID**: 56916062600