



Training Program on Sustainable Natural and Advance Technologies  
and Business Partnerships for Water & Wastewater Treatment,  
Monitoring and Safe Water Reuse in India

### Training Session Plan

#### Title of the training session

Treatment of Sewage using Improved MBBR and SAFF and Treatment of Faecal Sludge using Mechanical Dewatering and Drying System (MDDS)

#### Author(s) of the training session

Dr. Girish R. Pophali  
Senior Principal Scientist, Water Technology and Management Division  
CSIR-NEERI

#### Short description of the session

In this dynamic and engaging training session, participants will embark on a journey to enhance their technical skills on wastewater treatment and Faecal Sludge Management (FSM). Through a combination of interactive exercises, insightful discussions, and practical scenarios, attendees will acquire valuable knowledge and techniques to effectively treat domestic sewage and Faecal sludge.

The training will delve into key questions such as, what are the advantages of MBBR and SAFF over conventional sewage treatment processes like ASP? What are the current shortcomings in conventional MBBR? What is Faecal sludge and why it should be treated separately? Participants will suggest ideas, actively engage in discussions, and provide constructive feedback.

By the end of this training session, participants will have gained a comprehensive understanding of MBBR, SAFF and Faecal Sludge. Equipped with theoretical knowledge and practical strategies, they will be able to suggest suitable sanitation scheme to serve the society.

#### Learning objectives

At the end of the sessions, participants will:

1. Understand Faecal Sludge, its characteristics and how it is different from sewage.
2. Understand biological treatment of domestic sewage via attached growth processes.

3. Have a brief idea about conventional biological treatment processes like MBBR and SAFF, and their current shortcomings.

### Trainer's required profile

The trainer should have a background on Environmental Engineering & Wastewater treatment and experience with Designing Biological treatment units and Faecal Sludge Management.

### Expected duration of the training session

3 hours, with a break of 15 minutes

### Methodology and key contents of the session

Time	Topic	Key contents	Slides Numbers
5 min	Introduction to the session	NEERI's contribution to PAVITR, Author's details, and learning objectives.	1-5
25 min	Introduction to the technology (background overview, principles, performance expected, appropriateness)	Basic knowledge about Moving Bed Biofilm Reactor (MBBR), Submerged Aerobic Fixed Film Reactor (SAFF), Faecal sludge, and Mechanical Dewatering and Drying (MDDS)	6-11
60 min	Design of the technology (key considerations, basic calculations, key formulas, etc.)	Design details of full treatment scheme of MBBR, SAFF and Faecal sludge treatment plant (FSTP)	12-15
15 min	Break		
15 min	Construction and/or implementation	Progress detail of Pilot plants, Recent photographs, and expected date of completion.	17-20
30 min	Operation and maintenance Example: the PAVITR pilot	Daily maintenance and operation tasks for pilot plants.	21-24
12 min	Homework: exercise to design/implement the technology for a case study	Answer some basic questions based on MBBR, SAFF and Faecal sludge management provided in the Presentation.	25-26
13 min	Final remarks	Final conclusion, doubt solving and interaction with participants.	

**Credits:** this training has been created in the framework of the EU-Indian Joint Project “PAVIRT-Potential and Validation of Sustainable Natural & Advance Technologies for Water & Wastewater Treatment, Monitoring and Safe Water Reuse in India”. This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No821410 and the Department of Sciences and Technology of India under the Grant DST/IMRCD/India-EU/Water Call2/PAVITR/2018 (G). For more information, please visit: <https://pavitr.net>