



Case Study: Intake Systems Maintenance Guide

CLIENT: Electric Power Research Institute (EPRI), Nuclear Maintenance Applications Center (NMAC)

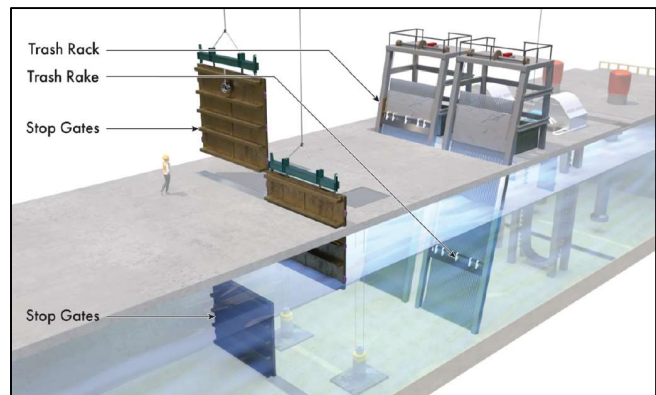
BACKGROUND: Load reductions and unit trips occur worldwide at thermal power generation facilities due to cooling water intake blockages. The loss of cooling water impacts facility safety (principally at nuclear facilities) and reliability and results in lost revenue. In addition, debris issues and sources are constantly evolving in response to gradual environmental changes. Each intake blockage occurrence can present new challenges to station design and operating margins. Mitigating the impacts requires that intake screening equipment be in good working order so that potential inundations of debris (e.g., swarms of jellyfish or raft of seaweed) can be effectively managed. To that end, preventive maintenance (PM) of the equipment is of paramount importance.

CHALLENGE: EPRI provides critical preventive maintenance guidance for common intake technologies. Over time, however, existing technologies undergo improvements and new technologies are developed. In most cases, this means that PM requirements also evolve. EPRI sought to update its previous PM guidance in *NMAC Circulating and Service Water Intake Screens and Debris Removal Equipment Maintenance Guide* by producing three new volumes of information with up-to-date information on new intake screening technologies.

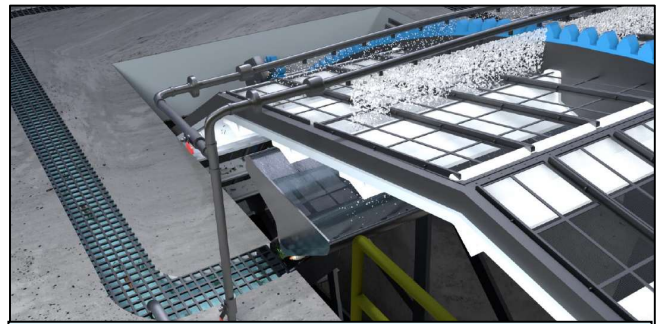
APPROACH: TWB and Pecten Aquatic (Netherlands) partnered to develop a three-volume series which describes the intake screening systems available (design, application, and limitations), their operation during typical and atypical debris conditions, common failure modes, and key PM strategies to keep the components in good working order. The effort included consultation and discussion with intake equipment vendors, practical experience, interviews with EPRI users group members, and review of available literature. The intake and debris management system components are covered as follows in each volume:

- [Volume 1](#) – Stop gate, trash racks, and trash rakes – published in 2021
- [Volume 2](#) – Fine screens – published in 2022
- [Volume 3](#) – Debris disposal systems – to be published in 2023

SOLUTION: TWB and Pecten Aquatic are engaging in detailed discussion with screening equipment vendors to collect the most relevant maintenance information from the fabricators of the equipment. Additionally, we are participating in discussions with industry experts to transfer the learnings into task-specific guidance that aids EPRI members in managing labor hours required for PM.



Intake system components covered in Volume 1 (courtesy EPRI)



Deck-level view of in-to-our drum screen (courtesy EPRI)