Owners of existing hydropower projects benefit from Tetra Tech’s recommendations of maintenance priorities, rehabilitation solutions, operational efficiencies, the safety of project works, and compliance with regulatory requirements.
Rehabilitation

Tetra Tech helps owners assess and implement maintenance priorities, operational efficiencies, safety of project works, and compliance with regulatory requirements.

Maintenance Prioritization

- Risk and reliability analysis
- Economic analysis
- Analyzing aging spillway gates, hoists, and bulkheads and designing measures to bring them up to current safety and operating standards
- Investigating submerged structures and designing repairs
- Assessing penstock wear and support pedestals
- Assessing root causes of concrete cracks, unusual displacements and wear in dams, intake structures, penstocks, tunnels, powerhouse structures, spillway training walls and bridges, scour in plunge pools, and tailraces
- Assessing instrumentation adequacy, functionality, and interpretation of data
- Modernizing electrical and control systems

Design Solutions

- Preparation of drawings and specifications for design/build or design/bid/build contracting mechanisms
- Structural, mechanical, electrical and controls engineering
- Structural finite element analysis
- Computational fluid dynamics analysis
- Soil and rock mechanics
- Bathymetric, ground and aerial surveying and mapping

Operational Efficiencies

- Optimization of reservoir operations
- Efficiency of water conveyance facilities
- Turbine and generator wear and degradation

Safety of Project Works

- Risk-based dam safety assessments
- Updating seismic and flood loadings
- Potential failure modes analysis (PFMA)
- Adequate spillway capacity
- Probable maximum flood (PMF) studies
- Emergency action plans (EAPs)
- Dam breach analysis

Regulatory Compliance

- Implementation of licensed terms and conditions
- Resolution of non-compliance issues
- Water quality and quantity monitoring
- Instrumentation rehabilitation

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