Power Vision Engineering

Solutions & Expertise in Hydropower
Transients and Operation

Transient Analysis

System Stability

Software Development and Distribution

Complex Flow Simulation
Activities

**Engineering:**
- **Water Hammer Calculation** (incl. Francis, Pelton, Kaplan, Bulb, Francis Pump-turbine, Pumps, Ternary Units)
- **Hydroelectric Transient Analysis** (incl. DFIM VarSpeed)
- **Energy Production Optimization** (OptiPower software)
- **Control System Optimization** (incl. Turbine Gov., AVR, PSS)

**SIMSEN Software:**
- Software Distribution
- Development
- Maintenance
- Customer Support
- Training Seminars

**System Stability Assessment:**
- **Full Load / Part Load Surge Analysis**
- **Rotor Stator Interactions**
- **Power Network Stability Analysis** (incl. Isolated, Islanded, Interconnected Operation)
- **Grid Code Compliance / Ancillary Services**

**Complex Flow Analysis:**
- CFD Computation
- Hydroacoustic Resonance Analysis
- Two Phase Flow Phenomena
- Model Tests Follow-up
References

Cleuson-Dixence, Switzerland, 1200MW Hydroelectric Power Plant:
• Hydraulic Transient Analysis, 3xPelton Turbines
• Emergency Closing Law Optimization
• Energetic Coefficient Analysis
• Primary Control Services Optimization

Avče, Slovenia, 185MW Pumped Storage Power Plant:
• Hydraulic Transient Analysis, 1xFrancis Pump-Turbine
• Air-Vacuum Valve Influence Analysis
• Surge Tank Optimization
• Surge Tank Scale Model Test Follow-up

FMHL+, Switzerland, 420 MW Pumped Storage Power Plant:
• Expertise and Hydraulic Transient Analysis
• Existing 4x60MW + new 2x120MW Ternary Units
• New Surge Tank Optimization
• Transient Analysis for Existing PSPP Modifications

EDF, France, 900 MW Pumped Storage Power Plant:
• 900MW Pumped Storage, 4xFrancis Pump-turbines
• Hydroelectric Transient Analysis
• Grid Code Compliance Evaluation
• Primary and Secondary Control Capability Assessment
Power Vision Engineering Sàrl, Expertise and Consulting to Support you in your Hydroelectric Projects

Partners

Ecole polytechnique fédérale de Lausanne
Laboratory for Hydraulic Machines
Electrical Machinery Group
CH-1015 Lausanne
Switzerland
lmh.epfl.ch
lme.epfl.ch

AquaVision Engineering Sàrl
Ch. des Champs-Courbes 1
CH-1024 Ecublens
Switzerland
www.aquavision-eng.ch