

## **Solving the Workforce Knowledge and Skills gap for Hydropower: Voith Hydro's Education and Training**

The global hydropower industry is facing the challenge of workforce transition and the demand for a skilled workforce for mission-critical work. The need to provide basic information and training about the various aspects of hydropower technology to professionals is growing.

Some of the key staffing challenges and issues of the hydropower industry are:

- Decreasing knowledge and skills of employees due to retirement.
- Lack of formal hydropower education in engineering and technical schools.
- New hires that lack experience and know how.
- Staff shortages often due to the remoteness of hydropower work.
- Increasing demands to extend the operating life of plant equipment.
- Pressure to ensure energy generation is eco-friendly, reliable and safe.

In response to this development Voith Hydro, as a part of their HyService™ solutions, developed a performance based professional development training curriculum of courses.

Target audience:

Engineers and technicians wishing introductory or in-depth insights of hydropower plant technology works, principles of equipment design, manufacturing, operation and maintenance.

Goal:

Enhance the experience of students to be effective on-the-job.

Course Topics:

1. Hydropower Plants
2. Turbines
3. Generators
4. Speed and Voltage Regulation Systems

The content is focusing on the fundamentals of the hydro business, regardless of manufacturer, with a goal to improve on-the-job performance.

Courses can be held at Voith Hydro facilities in Brazil or Canada, or for delivery at client sites with necessary tailoring or customization. Courses can be taught in English, Portuguese and some are available in French.

The introductory courses of 8 to 16 hours (one to two days duration) are:

1. Hydropower 101 – Technology Overview and Life Cycle.
2. Generators: Effective Solutions for Generator Modernization and Rehabilitation.
3. Turbine Design.
4. Turbines: Effective Solutions for Turbine Modernization and Rehabilitation including Field Machining.
5. Mechanical Balance-of-Plant System Design Fundamentals.
6. Hydraulic Governor Maintenance.
7. Shaft Line Alignment for Hydropower equipment. *(in development)*
8. How Automation Improves Hydropower Plant Operation and Maintenance Reliability and Efficiency.
9. Stator Winding Design, Manufacturing, Installation and Testing for Rotating Equipment.

The four in depth-courses of 40 hours (one week duration) are:

1. Hydropower Plants: Design principles, operation and maintenance.
2. Hydraulic Turbines: Design concepts, operation and application.
3. Hydraulic Generators: Design concepts, operation and application.
4. Speed and Voltage Regulation Systems: Theory and practice.

Voith Hydro's Customer Education and Training team includes Voith Subject Matter Experts, led by an Instructional Designer, and adheres to international industry and instructional design methodology for performance based training, the "Systematic Approach to Training (SAT)" for course analysis, design, development, delivery, implementation and evaluation.

The benefits for the hydropower industry and client are many and specifically:

- Training to Accelerate Experience to close the knowledge gap.
- Practical Content, regardless of manufacturer, incorporating case studies, samples, artifacts, workshops, videos and plant tours. Depending on location hands-on skills training.
- Courses are developed by experts according to the formal instructional design methodology, Systematic Approach to Training (SAT) to ensure performance.
- Expert Instructors trained in course facilitation and delivery designed to adult learning principles.
- Customization of course content to specific needs and delivered at a Voith site or client site.
- Voith Hydro commitment to expand course library and to certify course for professional accreditation.

More info:

<http://www.voith.com/hydroschooltomarket> and <http://bit.ly/HyServiceTrainingSymposium2015>

More info about HyService™: <http://www.voith.com/HyService>