



**HYDRO PLANTS SAFETY**  
Pump Plants  
Hydroelectric Plants  
Any Hydraulic Systems  
Design – Redesign – Troubleshooting

## **Seminar October 9 & 10, 2018, Belgrade, Serbia: Nuclear- Thermal- Hydro-electric and Other Hydro Plants Safety**

International Conference "Energy and Ecology Industry EEI2018"  
October, 11-13, 2018, Belgrade, Serbia <http://eei2018.org>

If you are unable to attend this seminar, here is information on future seminars their contents:  
[FUTURE HYDRO PLANTS SAFETY SEMINARS.pdf](#)



**UNIVERSITY OF  
BELGRADE**

Faculty of Mechanical Engineering  
Address:  
Kraljice Marije 16, Beograd, Serbia



## **Essential Hydro Plant Safety: Seminar Details**

**Status:** Registration are currently being accepted

### Essential Hydro Plant Safety

**Date:** Tuesday, October 9, 2018

**Time:** 8:30 AM- 9:00 AM: Registration

9:00 AM-5:00 PM: The Challenge of 21st Century Hydro and Pumped Storage – a guided SWOT assessment

### Safe Design Workshop

**Date:** Wednesday, October 10, 2018

**Time:** 8:30 AM- 9:00 AM: Registration

9:00 AM-5:00 PM: A Safe Design Workshop with Practical Examples

**Location:** Faculty of Mechanical Engineering, Kraljice Marije 16, 11000 Beograd, Serbia

**Presenters:** Aleksandar Gajic, Prof., PhD.  
Stanislav Pejovic, Prof., PhD., P.Eng.

**Cost:**           **Until July10, 2018:**  
October 9                               **395 EUR**  
October 10:                           **395 EUR**  
Both days:                           **595 EUR**

**After July10, 2018:**  
October 9                               **495 EUR**  
October 10:                           **495 EUR**  
Both days:                           **695 EUR**

**All prices are subject to applicable taxes.**

**Discounts:**   **A group discount for three or more people from the same organization; please contact presenters for details.**

**Please Note:** **A minimum number of registrations are needed by September 10, 2018 to proceed.**  
**Please register early to avoid cancellation.**

**To register:**   **Please print form, fill, sign and email scanned copy to presenters (see below)**  
**<http://original.stanpejovic.com/Form to sign and email.pdf>**

**Contact**       **If you need additional information, please contact:**

**Presenters:**   **Prof. S. Pejovic +1-905-896-1253; Email: pejovic.stan@gmail.com**  
**Prof. A Gajic   +381-11-337-0342; Email: agajicprof@gmail.com**

This seminar is designed to provide a lively, engaged, informative and reasonably comprehensive overview of both the potential and the challenges associated with 21st-century hydro power. Participants' interaction, encounter, and a variety of enrollment models will be presented..

## **Handouts**

Each participant will be provided with presentation slides and the book:

Pejovic S., Gajic A.,

### **The Rules for Hydraulic Transient Design Analysis**

- **Guide for Designers and Manufacturers**

- **Recommendations for Investors and Managers**

Toronto – Belgrade, 2018, Pages 143, Figures 59, Tables 2

<http://original.stanpejovic.com/Book samples pages.pdf>

History of the book: Experience of more than 100 years: Link:

<http://original.stanpejovic.com/History The Rules for Hydraulic Transients.pdf>

## **Audience**

This seminar will be particularly helpful to consultants, contractors, and to electric utility companies including decision makers, managers, engineers (from civil, electrical and mechanical disciplines), and technicians responsible for design, operation, and maintenance of hydroelectric power plants. General audiences and university engineering students interested in gaining relevant knowledge and experience are also welcome.

### **Courses are particularly helpful to:**

Owners,  
Decision Makers,  
Consultants,  
Contractors,  
Utility Companies,  
Managers,  
Engineers,  
Technicians

### **Responsible for:**

Design,  
Operation,  
Maintenance,  
Refurbishment  
Troubleshooting,  
Redesign,  
Improvement.

## **Overall Learning Outcomes**

- To understand how hydro systems are designed and how they function
- To better appreciate design tensions and the nature of the key trade-offs
- To appreciate the ingenuity of the past and the challenges of the future
- To gain valuable insight into hydro accidents, so these are less likely to be repeated
- To evaluate the key strengths and weakness of key design choices and decisions
- To enhance both your practical and theoretical understanding and thus your career
- To be able to complete basic calculations and design choices
- To network and interact with fellow participants and instructors
- Thus, to position yourself to better exploit your next business or professional opportunities

## **Tuesday, October 9, 2018 – The Challenge of 21<sup>st</sup> Century Hydro – a guided SWOT analysis Essential Hydro Plant Safety**

This day is organized around a set of case studies of the best and the worst of recent hydro design experiences:

- Turbine operating diagrams and optimization
- Aging from transient events - start, stop, change load, etc.
- BC Site C Clean Energy Project, Canada: “S” Shape flow at Inlet structure
- Other “S” Shape cases: Niagara Falls - On, Canada, Grand Coulee - USA , etc.
- Richard B. Russell Power Plan, USA, operating modes
- The Sayano-Shushenskaya Disaster in Russia in 2009 (76 dead)
- Similar accidents as of 1962: US, former USSR, Sweden, former Yugoslavia etc.
- Extension in quick aging zones; accelerated age: Iron Gates 1 - Serbia, etc.
- Janpeg - Canada, Iron Gates 2 - Serbia, etc.: accelerated age
- Three Gorges Turbines - China high temperature cavitation
- Seven pumped storage plants troubles and incidents - China
- Confidential cases

The day focuses on achieving excellence in operation, maintenance & design and, as a counter weight to overly-optimistic expectations, a summary of the kinds of things that can happen when things go wrong.

The seminar is educationally constructed around a vigorous and lively SWOT analysis of hydro: looking at hydro’s strengths and weaknesses leading to an analysis of opportunities and threats. This day will present published and documented examples of systems that worked well, as well as those that didn’t; the goal is to expose and elucidate those critical elements in the design and construction process that contributed to success and failure.

The course will share more than century(s) experience of the instructors with the goal of assisting owners, authorities and designers to better design and operate their systems at optimum conditions: with up to 10% more profit and cleaner energy production, even while providing spinning reserve to help prevent blackouts, and by simultaneously reducing risk of accidents and breakdowns. We will consider the Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis associated with modern hydroelectric plant design and operation.

Similar seminars three times presented in Vancouver, British Columbia, Canada; [Learn More >](#)  
(Or its copy: [http://original.stanpejovic.com/APEGBC\\_Essential\\_Hydro\\_Power\\_Seminar.pdf](http://original.stanpejovic.com/APEGBC_Essential_Hydro_Power_Seminar.pdf))

## **Wednesday, October 10, 2018 – Fundamental Guided Design Workshop with Practical Examples and Applications**

Day starts with a brief summary of the strengths and challenges of hydro when viewed from a 21<sup>st</sup> century perspective.

The day will feature a variety of short hands-on exercises to create an active learning environment. Each major topic will begin with an insightful and practical concept, that will include application examples, and each session will provide a carefully staged confirmation exercise to keep learning active and engaged.

The basic hydraulic configuration and design choices associated with a Pelton system will be progressively selected over the day, with the various approaches summarized, discussed and critiqued.

The overall goal is to reveal how hydraulic, mechanical, civil and electrical interdependencies are satisfied at the basic level through key choices of penstock, turbine and generator parameters. Interspersed through the day will be worked design examples and case studies to reveal various practical challenges and choices. The approach is to actively develop a view of both the “big picture” in a hydro design, along with an appreciation of how the details contribute to a successful project.

### **Cancellation Policy**

Registered attendees unable to attend may designate a substitute, at least one business day prior to the seminar.

If notice of cancellation of registration is received:

- 10 business days or more prior to the event, a refund will be processed, and
- Less than 10 business days prior to the event, no refunds apply.

The organizers reserve the right to cancel the event if less than the minimum required participants have registered.

**Once the book and/or presentation slides are provided to participant, no refund will be issued.**

Please look at the web site to verify that the event is confirmed before making travel and accommodation arrangements.

If applicable, to process your refund in a timely manner, please provide the following information:

- Name of Seminar
- Reason for refund request
- Amount of refund
- Account used
- Credit Card used