



Institute for Energy Systems
and Thermodynamics ,
Research group: Fluid-Flow
Machinery, TU Wien



20th INTERNATIONAL SEMINAR ON HYDROPOWER PLANTS

Celebrating 40 years of Industry-Academic Engagement

14th – 16th November 2018

TU Wien, Austria

Conference program
Tagungsprogramm

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THE INTERNATIONAL JOURNAL ON
**HYDROPOWER
& DAMS**

HYDRO
REVIEW

Water Power
& DAM CONSTRUCTION

CELEBRATING 40 YEARS OF INDUSTRY-ACADEMIC ENGAGEMENT

20th International Seminar on Hydropower Plants 14 - 16 November 2018 - Vienna - Austria

SESSION OVERVIEW

Wednesday - 14/11/2018

08:00am - 09:30am	Registration at the conference-office	Theatre	Marshall room
09:30am - 12:00am	Opening Session		
12:00pm - 01:30pm	Lunch Break		
01:30pm - 03:30pm	PANEL Panel discussion on Digitalization and Big Data in Hydropower	SESSION 1.2 Material, Manufacturing and Design guidelines	
03:30pm - 04:00pm	Coffee Break		
04:00pm - 04:30pm	Bus Transfer from Conference Center to the Hydraulic Laboratory, TU Wien		
04:30pm - 06:30pm	Visit of the Hydraulic Laboratory at TU Wien		
06:30pm - 12:00pm	Evening program		

Thursday - 15/11/2018

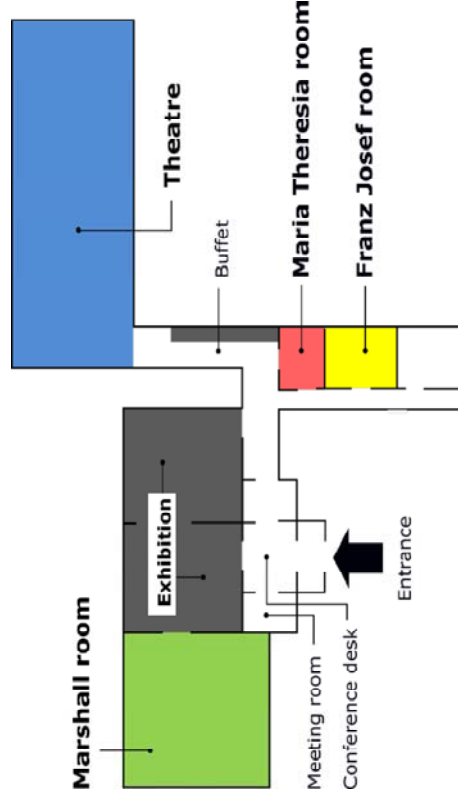
	Theatre	Marshall room	Franz Josef Room	Maria Theresia Room
09:00am - 10:30am	SESSION 2.1 Commissioning and Operation	SESSION 2.2 Hydraulic component Investigations	SESSION 2.3 Future technologies	SESSION 2.4 PhD Presentations 1
10:30am - 11:00am	Coffee Break			
11:00am - 12:30pm	SESSION 3.1 Flexible Hydropower Plants	SESSION 3.2 Sound and Vibration	SESSION 3.3 Sustainability aspects	SESSION 3.4 PhD Presentations 2
12:30pm - 01:30pm	Lunch Break			

01:30pm - 03:00pm	SESSION 4.1 Pumped storage and variable speed units	SESSION 4.2 Operation, Monitoring and Risk Assessment	SESSION 4.3 Standardization and Legal aspects	SESSION 4.4 PhD Presentations 3
03:00pm - 03:30pm	Coffee Break			
03:30pm - 05:00pm	SESSION 5.1 Project Development and Optimization	SESSION 5.2 Numerical Simulation and Optimization	SESSION 5.3 Small Hydro	SESSION 5.4 PhD Presentations 4
07:00pm - 12:00pm	Evening program			

Friday - 16/11/2018

	Theatre	Marshall room
09:00am - 10:30am	SESSION 6.1 Dynamics and Transients	SESSION 6.2 Intelligent Control and Monitoring Systems
10:30am - 11:00am	Coffee Break	
11:00am - 12:30pm	SESSION 7.1 Big Data and Digitalization	
12:30pm - 01:30pm	Closing Session	

FLOORPLAN



CELEBRATING 40 YEARS OF INDUSTRY-ACADEMIC ENGAGEMENT

20th International Seminar on Hydropower Plants
14 - 16 November 2018 - Vienna - Austria

CONFERENCE PROGRAM

Wednesday - 14/11/2018

08:00am Registration at the conference-office

09:30am Conference opening session

Location: Theatre, Chair: Prof. Christian Bauer, TU Wien, AUSTRIA
Dr. Eduard Doujak, TU Wien, AUSTRIA

Conference Opening

C. Bauer - TU Wien, Institute for Energy Systems and Thermodynamics, Vienna, AUSTRIA

Big Data Opportunities and Challenges: How to obtain trustworthy analytical insights

A. Rauber - TU Wien, Institute of Information Systems Engineering, Vienna, AUSTRIA

12:00pm Exhibition Opening and Lunch Break

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01:30pm Panel discussion on Digitalization and Big Data in Hydropower

Location: Theatre, Moderation: Stefan Gehrler, ORF Wien

Panelists are:

Jörg LOCHSCHMIDT, Vice President Digital Hydro, VOITH

Herfried HARREITER, Head of Assessment Management, Verbund Power GmbH

Andreas RAUBER, Head of Information and Software Engineering Group, TU Wien

Olivier BERCHTOLD, Team member Advanced Technologies Hydro, GE Renewable Energy

Wolfgang GAWLIK, Head of Research Group "Power Systems", TU Wien

01:30am SESSION 1.2 - Material, Manufacturing and Design Guidelines

Location: Marshall room, Chair: Dipl.-Ing. Josef Sugg, Andritz Hydro GmbH, GERMANY

Improving toughness of embrittled S690 weld material by special heat treatment

H. Cerjak, N. Enzinger - TU Graz, AUSTRIA, O. Caliskanoglu, G. Figner - Stirtec GmbH, AUSTRIA, M. Pudar - Magna Steyr Fahrzeugtechnik GmbH, AUSTRIA, F. Mendez-Martin, Montanuniversität Leoben, AUSTRIA

Influence of pipe fabrication quality of penstocks on hydropower components

Ch. Buzzi, H. Cerjak, Ch. Moser - TU Graz, AUSTRIA, M. Akrouf, B. Chanzy - Tractebel Engineering S.A., FRANCE

Robot based additive manufacturing in the production of hydropower components

D. Nikolaev, F. Bleicher - TU Wien, Institute for Production Engineering and Laser Technology, Vienna, AUSTRIA

Analysis of the grid regulation impact on water turbine self-lubricating bearings lifetime

P. S. Martins Pereira, K. Laal Riahi, W. Paes Barreto - Federal- Mogul Deva GmbH, Stadtallendorf, GERMANY

Bolted joints in hydroelectric power plants - comparison of results from test with calculation results on the basis of an example

R. Huber - TÜV Austria TVFA, Prüf- und Forschungs GmbH, Vienna, AUSTRIA

03:30pm Coffee Break

sponsored by



04:00pm Bus transfer from Conference Center to the Hydraulic Lab at TU Wien

04:30pm Visit of the hydraulic laboratory at TU Wien

06:30pm Bus transfer from Hydraulic Lab at TU Wien to Evening Reception

06:30pm Evening Program

Museum of Military History, Arsenal, Objekt 1, Ghegastraße, 1030 Wien

Cocktail reception

Guided tours

| 07:00pm - 11:00pm |

wine tasting sponsored by



Thursday - 15/11/2018

09:00am SESSION 2.1 - Commissioning and Operation

Location: Theatre, Chair: Dipl.- Ing. Stephan Kolb, AF-Consult Switzerland AG, SWITZERLAND

Hydropower plant Schütt – second life – rehabilitating a diverted flow power plant after 105 years of operation

P. Macher, Ch. Rupp - KELAG Kärntner Elektrizitäts AG, Klagenfurt, AUSTRIA

Integration of Risseck II pumped storage plant into the operation of power system Malta

J. Mayrhuber, VERBUND Hydro Power GmbH, Vienna, AUSTRIA

Retrospective of the project "Renewal of the storage pump Oschenik 1"

S. Leitner, M. Kandutsch, KELAG Kärntner Elektrizitäts AG, Klagenfurt, AUSTRIA

Pumped-storage power plant Obervermuntwerk II - expectation during assembly and commissioning

A. Rocks, B. Wittwer, A. Kriegel, L. Werle, Vorarlberger Illwerke AG, AUSTRIA

09:00am SESSION 2.2 - Hydraulic component investigations

Location: Marshall room, Chair: Prof. Pavel Rudolf, Brno University of Technology, Czech Republik

In situ investigations and failure analysis of the rainwater pumps installed in a wastewater treatment plant

S. Muntean - Romanian Academy , Timișoara Branch, ROMANIA, L. Marșavina, L. Hedeș, L. E. Anton - Universitatea Politehnica Timisoara, Timișoara, ROMANIA I. Vlaicu - AQUATIM SA, Municipal Water Company, Timișoara, ROMANIA

Performance characteristic of a single-blade pump from the viewpoint of a positive displacement machine

R. Willinger - TU Wien, Insitute for Energysystems and Thermodynamics, Vienna, AUSTRIA

Cavitation improvement of storage pump with replacement of impeller

R. Pavlin, F. Vehar, A. Škerlavaj - Kolektor Turboinštitut, d.o.o., Ljubljana, SLOVENIA

Technical solution to increase capacity of the centrifugal pumps operated in the protection system against flooding due to climate change

D. Ognean, D. C. Moș - Universitatea Politehnica Timisoara, Timișoara, ROMANIA, S. Muntean - Romanian-Academy – Timișoara Branch, Timișoara, ROMANIA

09:00am SESSION 2.3 - Future technologies

Location: Franz Josef Room, Chair: Prof. Gerald Zenz, TU Graz, AUSTRIA

Prepare Bouyant energy - Innovative concept for hydraulic offshore energy storage

B. Steidl, R. Klar, M. Aufleger - University of Innsbruck, Unit of Hydraulic Engineering, Innsbruck, AUSTRIA, R. Gabl - University of Edinburgh, Institute for Energy Systems, Edinburgh, UK, Klaus Käfer, Christian Bauer - TU Wien, Institute for Energy Systems and Thermodynamics, Vienna, AUSTRIA

Powertower - sustainable and efficient storage for electricity and heat

V. Neisch, M. Aufleger - University of Innsbruck, Unit of Hydraulic Engineering, Innsbruck, AUSTRIA

Counter-rotating type power units playing outstandingly at on- and off-shore plants

T. Kanemoto - Saga University, JAPAN; M. Inagaki - JSE Co., Ltd., JAPAN; I. Samura - Kyowa Engineering Consultants Co., Ltd, JAPAN; Y. Nakanishi - Kanagawa University, JAPAN

A probabilistic approach to cost estimation of ancillary services from hydropower units

H. Lindsjö - N63 Degrees AB, SWEDEN

09:00am SESSION 2.4 - PhD Presentations 1

Location: Maria Theresia Room, Chair: Dr. Christof Gentner, GE Renewable Energy, SWITZERLAND

Fatigue analysis of a prototype Francis turbine based on strain gauge measurements

J. Unterluggauer, E. Doujak, Ch. Bauer - TU Wien, Institute for Energy Systems and Thermodynamics, Vienna, AUSTRIA

Fluid-structure interaction in a pump-as-turbine operating at part load

P. Dahal, A. Henderson, X. Wang, D. Giosio - University of Tasmania, Hobart, AUSTRALIA

Numerical investigation of added mass and damping effects on a hydrofil in cavitation tunnel

P. Cupr, P. Rudolf, V. Habán - Brno University of Technology, Viktor Kaplan Department of Fluid Engineering, Brno, CZECH REPUBLIC

10:30am Coffee Break

sponsored by



11:00am SESSION 3.1 - Flexible Hydropower Plants

Location: Theatre, Chair: Prof. Robert Schürhuber, TU Graz, AUSTRIA

Hydropower and wind energy - two inseparable renewables for enabling the energy transition

M. Bachhiesl - VGB Power Tech e.V., Essen, GERMANY

Best practice grid restoration with hydropower plants

S. Polster, R. Schürhuber, H. Renner - Graz University of Technology, Institut of Electric Power Systems, Graz, AUSTRIA, L. Ruppert - Renewable Energy Division - AfDB, IVORY COAST, R. Schmaranz - KNG Kärnten Netz GmbH, Klagenfurt, AUSTRIA, Ch. Rupp, Ch. Tengg - KELAG Kärntner Elektrizitäts-Aktiengesellschaft, Klagenfurt, AUSTRIA

An industrial microgrid powered by a Pelton unit

J. Hell, W. Michler, W. Hofbauer, S. Kadam - Andritz Hydro GmbH, Vienna, AUSTRIA

Flexibility of the slovenian hydro subsystem for short term adequacy assessment

G. Zlatarev - Electoinstitute Milan Vidmar, Ljubljana, SLOVENIA, L. Perči-Štefančič, V. Türk - Elektro-Slovenia (ELES), Slovenian TSO, Ljubljana, SLOVENIA

11:00am SESSION 3.2 - Sound and vibration

Location: Marshall room, Chair: Prof. Thomas Staubli, Hochschule Luzern, SWITZERLAND

Successful vibration analysis at a 200 MW pump-turbine in Luxembourg

P. Tetenborg, J. Lenz - Kötter Consulting Engineers GmbH & Co KG, Rheine, GERMANY

Investigation of generation of unwanted sound using CFD simulation of hydro turbine units in (4x100 MW) Koteshwar hydro-electric project in India

S. H.L. Arora, S. Mishra, S. Rawat -THDC India Limited, Uttarakhand, INDIA, J. Banerjee, P. L. Patel - Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat, INDIA

Auto-oscillation - basic considerations and protection system for Waldeck hydro group

P. Llosa - Andritz Hydro GmbH, Ravensburg, GERMANY, J. Lingelbach - Uniper Kraftwerke GmbH, Edertal, GERMANY

Analysis on calculation methods in time and frequency domain for shaft vibrations in turbine off-design conditions

P. Hennes, W. Weber - Voith Hydro GmbH & co KG, Heidenheim, GERMANY

11:00am SESSION 3.3 - Sustainability aspects

Location: Franz Josef Room, Chair: Dr. Richard Huber, TÜV AUSTRIA TVFA, AUSTRIA

The integration of fish-friendliness metrics in industry practices for turbine design

P. Romero-Gomez, J. Michelcic, M. Lang, S. Weissenberger - Andritz Hydro GmbH, Linz, AUSTRIA

Hod UV provides non-chemical biofouling control in hydroelectric facilities

Y. Rozenberg - Atlantium Technologies, ISRAEL, Jörg Engeling - Atlantium Technologies, Bad Salzufen, GERMANY

Greenhouse gas emissions from the newly created Romaine-1, Romain-2 and Romaine-3 reservoirs in Boreal Quebec (Canada)

A. Tremblay - Hydro-Québec, Direction Environnement – Aquatic Systems, Montréal, CANADA, P. del Giorgio, F. Rust - Université du Québec à Montréal, Montréal, CANADA, M. Demarty - Englobe Corp., Montréal, CANADA, F. Bilodeau, S. Poliquin - Hydro-Québec, Direction Environnement, Montréal, CANADA

11:00am SESSION 3.4 - PhD 2

Location: Maria Theresia Room, Chair: Prof. Reinhard Willinger, TU Wien, AUSTRIA

Analysis of a full load operating point of a propeller turbine using scale-resolving turbulence models

B. Junginger, S. Riedelbauch - University of Stuttgart, Institute of Fluid Mechanics and Hydraulic Machinery, Stuttgart, GERMANY

Investigation of hydraulic losses in a centrifugal pump with low specific speed

F. Hankeln, S. Riedelbauch - University of Stuttgart, Institute of Fluid Mechanics and Hydraulic Machinery, Stuttgart, GERMANY

Performance improvement of a mixed-flow pump by means of multi-objective optimization

F. Hahn, J. Unterluggauer, Ch. Bauer - TU Wien, Institute for Energy Systems and Thermodynamics, Vienna, AUSTRIA

12:30pm Lunch Break

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01:30pm SESSION 4.1 - Pumped storage and variable speed units

Location: Theatre, Chair: Prof. Wolfgang Gawlik, TU Wien, AUSTRIA

Basic layout of a pumped-storage unit with full size converter for a very large head span

A. Hammer, H. Götsch, W. Kofler, A. Egger - TIWAG - Tiroler Wasserkraft AG, Innsbruck, AUSTRIA

Second generation of large double fed induction motor generators

W. Ladstätter, A. John, M. Kohlhofer, P. Leopold - Andritz Hydro GmbH, Weiz, AUSTRIA

Controller Considerations for variable speed PSPP Fengning II

A. Lechner - Andritz Hydro GmbH, Vienna AUSTRIA

Converting conventional pumped storage plants into variable speed

Ch. Gentner, G. Holzmann, F. Mauerer . GE Renewable Energy, Birr, SWITZERLAND

01:30pm SESSION 4.2 - Operation, Monitoring and Risk Assessment

Location: Marshall room, Chair: Dipl.-Ing. Oliver Haupt, KfW-Development Bank, GERMANY

On-board measurements at a 100MW high-head Francis turbine

M. Titzschkau - Kraftwerke Oberhasli AG - Grimsel Hydro, Innertkirchen, SWITZERLAND, V. Hasmatuchi, J. Decaix, C. Münch-Alligné - University of Applied Sciences Western Switzerland, School of Engineering, Sion, SWITZERLAND

Discharging water through Kaplan turbines by means of speed no load operation mode - impact on turbine design

Ch. Weichselbraun, T. Klingbacher, G. Penninger - VERBUND Hydro Power GmbH, Vienna, AUSTRIA

Condition monitoring and assessment of machine parts in the pumped-storage power plant Vianden

F. Zanter - Société Electrique de l'Our (SEO), LUXEMBOURG, F. E. Silber, G. Wackenhut - Materials Testing Institute University of Stuttgart (MPA), GERMANY

Reliability indexing of intra-facility dispatch decisions

S. Signore, B. Smith - Oak Ridge National Laboratory, Oak Ridge, USA

01:30pm SESSION 4.3 - Standardization and legal aspects

Location: Franz Josef room, Chair: Dr. Klaus Schneider, Hydropower Consultant, GERMANY

Presentation of the revised standard "Richtlinien für Werkstoffe in Hydraulischen Maschinen – RWHM" / Part 1: General presentation

S. Leitner - KELAG Kärntner Elektrizitäts-Aktiengesellschaft, Klagenfurt, AUSTRIA, Ch. Schenk - TIWAG - Tiroler Wasserkraft AG, Innsbruck, AUSTRIA

Presentation of the revised standard "Richtlinien für Werkstoffe in Hydraulischen Maschinen – RWHM" / Part 2: Component design using k-factors

Ch. Schenk - TIWAG - Tiroler Wasserkraft AG, Innsbruck, AUSTRIA, S. Leitner - KELAG Kärntner Elektrizitäts-Aktiengesellschaft, Klagenfurt, AUSTRIA

Sustainable production and operation of hydropower plants - non-destructive testing and inspection as a decisive factor

W. M. Auer - TVFA Hydro TPA KKS, Vienna AUSTRIA

The key provisions on HPP rehabilitation / modernisation contracts

G. Geisseler - Geisseler Law, Freiburg, GERMANY

01:30pm SESSION 4.4 - PhD Presentations 3

Location: Maria Theresia Room, Chair: Dr. Sebastian Muntean, Romanian Academy - Timisoara Branch, ROMANIA

The growth of a rotary gravity wave in a cylindrical container

H. Steinrück - TU Wien, Institute for Fluid Mechanics and Heat Transfer, Vienna, AUSTRIA; A. Maly - TU Wien, Institute for Energy Systems and Thermodynamics, Vienna, AUSTRIA

Flow phenomena in a model pump-turbine at synchronous condenser mode - description of test rig

A. Maly, K. Käfer, Ch. Bauer - TU Wien, Institute for Energy Systems and Thermodynamics, Vienna, AUSTRIA

Vibrations of flexible bodies submerged in fluid

M. Havlásek, T. Machů, F. Pochylý - Brno University of Technology, Viktor Kaplan Department of Fluid Engineering, Brno, CZECH REPUBLIC

03:00pm Coffee Break

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03:30pm SESSION 5.1 - Project Development and Optimization

Location: Theatre, Chair: Dr. Josef Prost, HTL Eisenstadt, AUSTRIA

Large store pumps for hydropower applications

B. List, T. Drabek, M. Nussmüller - Voith Hydro GmbH & Co KG, St. Pölten, AUSTRIA

Rells power station fracture on penstock

L. Werle - Vorarlberger Illwerke AG, Vandans, AUSTRIA; H. Cerjak, N. Enzinger, A. Hütter - Graz University of Technology, Institute of Materials Science, Joining and Forming, Graz, AUSTRIA; M. Pudar - Magna Steyr Fahrzeugtechnik GmbH, Graz, AUSTRIA

Monitoring salt water intrusion in Rupert bay, Québec, Canada, after the partial diversion of Rupert River to Eastmain-1 reservoir

A. Tremblay - Hydro-Québec, Direction Environnement – Aquatic Systems, Montréal, CANADA; C. Durocher - Hydro-Québec, Direction Environnement – Social Aspects, Montréal, CANADA

Hydropower optimization with renrisk

F.-P. Nagel, M. Fuentes Sifuentes, K. Knorpp - ILF Consulting Engineers Austria GmbH, AUSTRIA

03:30pm SESSION 5.2 - Numerical Simulation and Optimization

Location: Marshall room, Chair: Dr. Jiri Koutnik, Voith Hydro Holding GmbH & Co. KG, GERMANY

Development of a high specific speed Kaplan pit-type turbine – numerical and experimental verification

H. Benigni, J. Schiffer, Ch. Bodner, S. Leitner, H. Jaberg - Graz University of Technology, Institute of Hydraulic Fluidmachinery, Graz, AUSTRIA; S. Troyer - Troyer AG, ITALY

Development of a tailor-made Kaplan runner for HPP Krippau (Enns) by the use of various numerical approaches and comparison with test rig results

T. Krappel, M. Becker, L. Juhrig - Stellba Hydro GmbH & Co KG, Herbrechtingen, GERMANY; Ch. Weichselbraun - VERBUND Hydro Power GmbH, Vienna, AUSTRIA

3D numerical flow analysis of the non-uniformity induced by a reshaped geometry of the symmetrical suction elbow

D. C. Moş, L. E. Anton - Universitatea Politehnica Timisoara, Timișoara, ROMANIA; S. Muntean - Romanian-Academy – Timișoara Branch, Timișoara, ROMANIA

FSI simulation of tilting-pad thrust bearings: taper variations

D. Langmayr, W. Pscheidt, M. Himmelreich - Andritz Hydro GmbH, Linz, AUSTRIA

03:30pm SESSION 5.3 - Small Hydro

Location: Franz Josef Room, Chair: Prof. Devadutta DAS, Independent, INDIA

Optimization of turbine cascades in tidal flows

Ch. Schmitz - Industrial Science GmbH, Darmstadt, GERMANY; M. Studenroth, P. F. Pelz - Technische Universität Darmstadt, Chair of Fluid Systems, Darmstadt, GERMANY

Design and performance analysis of water vortex powerplant in context of Nepal

T. R. Bajracharya, R. M. Ghimire, A. B. Timilsina - Department of mechanical Engineering, Institute of Engineering, Kathmandu, NEPAL

Computational fluid simulations of hydrokinetic archimedean turbines harnessing the current potential of the mysterious river of Cephalonia and the Euripus Strait

V. Stergiopoulos - School of Pedagogical and Technological Education, ASPETE, Athens, GREECE, A. Stergiopoulou - National Technical University of Athens, GREECE

03:30pm SESSION 5.4 - PhD Presentations 4

Location: Maria Theresia Room, Chair: Dr. Peter Angerer, ANDRITZ Hydro GmbH, AUSTRIA

Investigation of the control behaviour of hydropower plants in island mode during grid restoration

V. Brost - Fichtner GmbH & Co. KG, Stuttgart, GERMANY; S. Riedelbauch - University of Stuttgart, Institute of Fluid Mechanics and Hydraulic Machinery, Stuttgart, GERMANY

Vibration analysis of a continuously overloaded large hydrogenerator at load rejection

C. Carounagarane, Th.R. Chelliah - Indian Institute of Technology Roorkee, Department of Water Resources Development and Management, Roorkee, INDIA; S V Appa Sarma - Tehri Hydropower Corporation India Limited, Rishikesh, INDIA

Hydraulic of the tail race surge tank of Gouvães pumped-storage hydropower

W. Richter, G. Zenz - Graz University of Technology, Institute of Hydraulic Engineering, Graz, AUSTRIA; Ch. Nicolet, Ch. Landry - Power Vision Engineering, Ecublens, SWITZERLAND; J. C. Vera Rodriguez, L. de la Torre Abietar - Iberdrola Generación Hidráulica, Bilbao, SPAIN

05:00pm End of Session

05:15pm Shuttle Bus to Vienna

07:00pm Evening Program

"Heuriger" Fuhrgassl - Huber, Neustift am Walde 68, 1190 Vienna

Evening reception at the "Heurigen" in Neustift am Walde
| 07:00pm - 12:00pm |

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VOITH

Friday - 16/11/2018

09:00am SESSION 6.1 - Dynamics and transients

Location: Theatre, Chair: Dr. Bernhard List, Voith Hydro GmbH & Co. KG, AUSTRIA

The extension of a hydropower to pumped-storage plant is often restricted by the maximum penstock pressure

K. Hirtenlehner - ZT Hirtenlehner e.U., Steyr, AUSTRIA; M. Matschl - Salzburg AG, Salzburg, AUSTRIA; G. Lang - Pöyry Austria GmbH, Salzburg, AUSTRIA

Increasing power output and flexibility of Kops I high head power plant with the help of waterhammer simulations

S. Höller, H. Jaberg - Graz University of Technology, Institute of Hydraulic Fluidmachinery, Graz, AUSTRIA; B. Wittwer - Vorarlberger Illwerke AG, Vandans, AUSTRIA

Experimental investigation of transient behavior in the surge tank physical model of a pumped-storage power plant (PSPP)

J. Arpe - AF-Consult Switzerland, Baden, SWITZERLAND; Ch. Nicolet - Power Vision Engineering, Ecublens, SWITZERLAND; P. Rodič - University of Ljubljana, Institute for Hydraulic Research, Ljubljana, SLOVENIA; A. Rejic - Soške Elektrarne Nova Gorica (SENG), Nova Gorica, SLOVENIA

Numerical Analysis of a hydraulic short circuit in the pumped storage power plants Kühtai 1 and 2

G. Höfer - TIWAG - Tiroler Wasserkraft AG, Innsbruck, AUSTRIA

09:00am SESSION 6.2 - Intelligent Control and Monitoring Systems

Location: Marshall room, Chair: Prof. Giorgio Pavesi, University of Padova, ITALY

Efficiency monitoring in the hydropower plant of Filisur

T. Staubli, A. Abgottspon - eteaeval GmbH, Horw, SWITZERLAND

Control-oriented modelling and state estimation of tidal turbinen with pitch control

B. Ritter, Ch. Schmitz - Industrial Science GmbH, Darmstadt, GERMANY; P. F. Pelz - Technische Universität Darmstadt, Chair of Fluid Systems, Darmstadt, GERMANY

Flow control in hydraulic machinery

P. Rudolf, O. Urban, D. Štefan, F. Pochylý - Brno University of Technology, Viktor Kaplan Department of Fluid Engineering, Brno, CZECH REPUBLIC

Flow rate measurement using pressure-time method

M. Saurwein - Geppert Hydropower, Hall, AUSTRIA

10:30am Coffee Break

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11:00am SESSION 7.1 -Big Data and Digitalization

Location: Theatre, Chair: Prof. Christian Bauer , TU Wien, AUSTRIA

Cloud based asset monitoring

J. Lochschmidt - Voith Hydro Holding GmbH & Co KG, Heidenheim, GERMANY

Useful cyber security measures for power generation and water plants in times of change

R. Biala, E. Bebernick - ABB AG, Mannheim, GERMANY

Trend intelligence for predictive maintenance and operation optimization in hydropower plants

M. Rentschler, M. Neuhauser, N. Ruchonnet, E. Parkinson - ANDRITZ Hydro AG, Vevey, SWITZERLAND; J.-Ch. Marongiu - ANDRITZ Hydro, Villeurbanne, FRANCE; M. Sick - ANDRITZ Hydro AG, Kriens, SWITZERLAND

Oncare augmented reality for asset lifecycle information management

Ch. Steinmaßl - Voith Hydro Holding GmbH & Co KG, Heidenheim, GERMANY

12:30pm Conference Closing Session

Location: Theatre, Chair: Prof. Christian Bauer , TU Wien, AUSTRIA

Closing Session

C. Bauer, TU Wien, Institute for Energy Systems and Thermodynamics, Vienna, AUSTRIA

01:30pm Conference close

01:45pm Shuttle Bus to Vienna

11:00am SESSION 7.1 -Big Data and Digitalization

Location: Theatre, Chair: Prof. Christian Bauer , TU Wien, AUSTRIA

Cloud based asset monitoring

J. Lochschmidt - Voith Hydro Holding GmbH & Co KG, Heidenheim, GERMANY

Useful cyber security measures for power generation and water plants in times of change

R. Biala, E. Bebernick - ABB AG, Mannheim, GERMANY

Trend intelligence for predictive maintenance and operation optimization in hydropower plants

M. Rentschler, M. Neuhauser, N. Ruchonnet, E. Parkinson - ANDRITZ Hydro AG, Vevey, SWITZERLAND; J.-Ch. Marongiu - ANDRITZ Hydro, Villeurbanne, FRANCE; M. Sick - ANDRITZ Hydro AG, Kriens, SWITZERLAND

Oncare augmented reality for asset lifecycle information management

Ch. Steinmaßl - Voith Hydro Holding GmbH & Co KG, Heidenheim, GERMANY

12:30pm Conference Closing Session

Location: Theatre, Chair: Prof. Christian Bauer , TU Wien, AUSTRIA

Closing Session

C. Bauer, TU Wien, Institute for Energy Systems and Thermodynamics, Vienna, AUSTRIA

01:30pm Conference close

01:45pm Shuttle Bus to Vienna