Polish Hydropower Conference

HYDROFORUM 2021

Szewalski Institute of Fluid-Flow Machinery,
Gdansk University of Technology, Gdańsk (Poland), 13-15.10.2021

in hybrid format

Patronage

MINISTRY OF INFRASTRUCTURE

MINISTRY OF STATE ASSETS

Association of Polish Electrical Engineers

Organisers

Towarzystwo Elektrowni Wodnych
iha affiliate member
Polish Hydropower Association (TEW)

The Szewalski Institute of Fluid-Flow Machinery of the Polish Academy of Sciences

TRMEW
Polish Association for Small Hydropower Development)

GDAŃSK UNIVERSITY OF TECHNOLOGY

PAN
Polish Academy of Sciences

Partners

PGE
Energia Odnawialna S.A.

Institute of Power Engineering, Gdansk Division

Hydropower Solutions
HYPOSO

FPE
FUNDACJA POSZANOWANIA ENERGII w Gdańsku
Foundation of Energy Saving in Gdańsk

Norwegian Energy Partners

BULLETIN no 4
Programme and guidelines for the delegates

HYDROFORUM 2021 is already the 10th edition of Polish Hydropower Conferences, organised ever since 2011 - for a longer time as a part of the RENEXPO Poland events. Since 2019 the conferences have carried the name of a renowned conference series organised in the period between 1973 and 2005 by the Institute of Fluid-Flow Machinery of the Polish Academy of Sciences (IMP PAN) with the scope covering the problems of hydraulic machinery and equipment, especially those used in the hydropower industry. In their current formula the HYDROFORUM events represent first of all a platform for discussing challenges encountered by the hydropower sector in Poland and in Europe in view of changes in its legal & administrative constraints, but also capabilities resulting from the available potential technology and environmental requirements. On the other hand the conferences serve exchange of opinions and information on the prospects and observed trends in sector development, experience on erection and operation of hydropower installations, new solutions to technical problems and the results of R&D efforts. We are proud to announce that this year conference will be attended by over 120 delegates. 36 conference contributions are envisaged.

Despite their naming, the Polish Hydropower Conferences are international meetings attended mainly by delegates from the Central-Eastern and Northern Europe. The debate is carried out in Polish and English, with simultaneous interpretation. The central item of the agenda is the HYDROFORUM Panel Debate, generally oriented on the sector problems in Poland and within the region. Competent representatives of central offices, widely conceived hydropower sector and research centres as well as independent experts are invited to the panel. However, other delegates present at the conference hall are always invited to express their opinions during the open discussion.

The HYDROFORUM 2020 was assumed to debate in the Szewalski Institute of Fluid-Flow Machinery of the Polish Academy of Sciences. A study visit in Żarnowiec PSPP was envisaged. Eventually, the COVID 19 pandemic has forced us to shift and eventually cancel the event. HYDROFORUM 2021 is planned to take place in a hybrid format) on October 13th and 14th this year. The conference will be preceded by the TEW National Assembly whereas the study visit will take place on October 15th, depending on the epidemic situation.

The conference package will comprise the annual subscription of Energetyka Wodna quarterly, access to the electronic version of presentations and printed proceedings with extended abstracts of conference contributions. The authors of selected contributions will be invited to prepare post-conference papers to be published in the *Energetyka Wodna* quarterly. In case of potential authors' willingness and sufficient number of Scientific Committee recommendations (at least 6) a post-conference issue of the *Transactions of IFFM* will be also published.

CONFERENCE PROGRAMME

October 13th, 2021

9:00	**Welcome addresses and opening of the Conference**
Opening Session Session is chaired by: **Janusz Steller,** Chairman of the Polish Hydropower Conferences Organising Committee	
9:00	**J. Steller** (IMP PAN/TEW): *HYDROFORUM Hydropower Conferences – legacy and current status* (PL)
9:20	Welcome addresses by Conference Organisers
9:30	**P. Szymczak** (SEP): *Mikhail Dolivo-Dobrovolsky - a pioneer of the three-phase system* (PL)
10:00	Welcome addresses by Honorary Committee Members
10:10	**Collective photograph**
Session I:	**Hydropower development strategy and legal/economic constraints** Session is chaired by: **B. Kuba Puchowski** (Piła Młyn / TRMEW)
10:40	**J. Fry** (EuroCOLD)**:** *The Hydropower Europe Forum – A Research and Innovation Agenda and a Strategic Industry Roadmap for hydropower development in Europe*
11:00	**K. Krüger** (Voith Hydro)**:** *Current technology trends & challenges for pumped hydro power plants including modernization aspects for increased flexibility*
11:30	**E. Malicka** (TRMEW): *Support for Polish SHP sector - legislation updates* (PL)
11:50	**M. Lis** (IOZE/Energetyka Wodna): *Summarisation of Polish SHP market current state and trends. A report* (PL)
12:10	**Coffee break**
Session II:	**Panel Debate " Hydropower in the energy transition and the policy of mitigating the climate change effects in Poland and within the region "** Session is chaired by: **Janusz Steller** (IMP PAN/TEW), **Edward Ziaja** (IASE/SEP/TEW)
12:30	**J. Steller**, E.Ziaja: *Introduction to the debate* (PL)
14:00	**Lunch break**
Session III:	**Renewable hybrid solutions in the context of hydropower (NORWEP Session))** Session is chaired by:: **Gun Vik, Ewa Kwast** (NORWEP), **Stanisław Lewandowski** (TEW).
15:00	**Opening of the session** (J.Steller, G.Vik, E.Kwast)
	A. Eide (Norwegian Ambassador to the Republic of Poland): Welcome address
	G. Vik (NORWEP): The Norwegian Energy Partners –Foundation & Mission
	A. Kamiński (PKN Orlen), **M. Lewandowski** (IMP PAN**), S. Lewandowski** (TEW): *The potential for hybrid solutions in the Polish HP sector* (PL)
	W. Grzeszczak (SCATEC): *Hybrid solutions for RES installation*
	T. Ødegaard (Multiconsult**)**: *Hybrid RES systems for hydropower plants*
	M. Stepiuk (DNV): *Good practices in floating PV applications*
	S. Jacobsen (Prediktor): *O&M and asset management in hybrid power plants*
	K. Kaźmierski, M.Korzeński (WUPROHYD): *Ecological maritime plant using three renewable energy sources*
	Brief presentation of several case studies - hybrid RES solutions - - a panel debate moderated by President **S.Lewandowski**
17:15	**Coffee break**

Session IV: European Union for the SHP development in Africa and Latin America (HYPOSO Session)

Session is chaired by::**Prof. Bernhard Pelikan** (Professor emeritus of BOKU University, Vienna)

17:30	**I. Ball,** D. Rutz (WIP, Munich): *HYPOSO Project - overview and the Promotion/Matchmaking Platform for the EU SHP Industry*
17:50	**P. Punys**, G. Vyčienė, L.Jurevičius (VMU, Kowno), A. Balčiūnas (VU): *GIS techniques as applied for planning small hydro projects in remote areas*
18:15	**Closing of the first day of Conference**
20:00	**Conference Dinner (Grano Hotel, Gdańsk)**

14. October 2021

8:30	**Opening of the Conference debate and organisatory communications**

Session V: Żarnowiec Hydropower Plant

Session is chaired by: **Stanislaw Lewandowski** (TEW Honorary President)

08:35	**S. Lewandowski** (TEW): *Stanisław Cicholski – passion and work* (PL)
08:55	**W. Majewski** (IMGW, Warsaw): *Żarnowiec Lake investigation for the design and operational purposes of Żarnowiec Pumped-Storage and Nuclear Power Plants* (PL)
09:25	**L. Adamczewski** (Żarnowiec PSPP): *Selected operation & maintenance problems of large size penstocks in pumped storage installations* (PL)
9:40	**Coffee break**

Session VI: Hydropower projects - challenges and technological trends

Session is chaired by:: **Jean-Jacques Fry** (EuroCOLD Chairman, Hydropower Europe Project Deputy Co-ordinator)

10:10	W. Szubert, R. Skakowski **, E. Ziaja** (IASE, Wroclaw): *Local load frequency control (LFC) node systems for hydropower plants according to the new standards of the PSE Polish Power Grid Operator* (PL)
10:35	**K. Woś**, K. Wrzosek, Ł. Pieron **(**Wody Polskie, Warsaw)**:** *Polish inland waterway multipurpose projects under construction and in planning* (PL)
10:55	**A. Łukaszewska-Trzeciakowska** (Regional Water Authority, Warsaw)**:** *Modern technical arrangements for erecting water barrages at lowland rivers at an example of Siarzewo Dam as planned at Vistula river* (PL)
11:15	**M. Kubecki** (IOZE, Kielce): *Hydropower plant refurbishment using modern Kaplan turbines - how to conduct a profitable rehabilitation?* (PL)
11:35	**B. Geisseler** (Geisseler Law, Freiburg): *Challenges in the construction & erection phase of a hydro power plant - mitigation strategies: the critical success factors of the erection contract*
11:50	**Coffee break**

Abbreviations:

BOKU	- Universität für Bodenkultur, Vienna
EuroCOLD	- European Club of ICOLD
IASE	- Institute of Power Systems Automation, Wroclaw
IMP PAN	- The Szewalski Institute of Fluid-Flow Machinery
IMGW	- Institute of Meteorology and Water Management
IOT	- Institute of Technology Optimisation, Warsaw
IOZE	- Institute of Renewable Energy Sources, Kielce, Poland
KUAS	- Kaunas Forestry and Environmental Engineering University of Applied Sciences
NORWEP	- Norwegian Energy Partners Foundation
PL	- paper to be presented in Polish
SEP	- Association of Polish Electrical Engineers
TEW	- Polish Hydropower Association
TRMEW	- Polish Association for Small Hydropower Development
VMU	- Vytautas Magnus University, Kaunas
VU	- Vilnius University
WAT	- Military Academy of Technology, Warsaw
WUT	- Wroclaw University of Technology

14. October 2021

Session VII: Operation and technology problems
- practical experiences and research work results

Session is chaired by:: **Maciej Kaniecki** (T-G DNALOP Sp. z o.o.)

12:15	**A. Błaszczyk**, M.Nawrocki, D.Woźniak (HYDROPOMP): *Balancing rotating assemblies of high capacity hydraulic units* (PL)
12:35	**J. Steller**, A .Krzemianowski (IMP PAN): *On prediction of cavitation damage in hydraulic machinery and equipment basing on the laboratory erosion tests* (PL)
12:55	**R. Masek** (Belse): *Cavitation erosion in fluid-flow machinery and its counter-measures* (PL)
13:15	**L. Opyrchał,** A.Bąk (WAT)**:** *Statistic methods as used for assessment of filtration through embankment dams* (PL)
13:35	**Lunch break**

Session VIII: Innovative hydraulic units and small capacity hydropower installations

Session is chaired by: **Zbigniew Krzemianowski** (IMP PAN / TEW)::

14:45	**S. Mayerhofer** (Voith Hydro): *StreamDiver – the most innovative concept for low head applications*
15:10	**M. Kaniecki,** T. Jerzak (T-G DNALOP Sp. z o.o), S. Kawalczyk (ENSYS): *Ultra-low head Kaplan turbine – a research project experience* (PL)
15:30	**D. Borkowski,** T. Węgiel (Cracow University of Technology), A. Polniak, D. Liszka (Aquatech): *nnovative modular small hydropower solutions for the lowest heads* (PL)
15:50	**A. Radzevičius**, P.Punys (Vytautas Magnus University, Kaunas): *In-conduit hydropower in municipal water networks of lowland areas. Case study in Lithuania*
16:10	**A.Olszewski** (IOT, Warsaw): *Floating hydropower plant with a hydrokinetic turbine - from a concept to the prototype development* (PL)
16:30	**Coffee break**

Session IX: Small hydropower and environment - design and research work results

Session is chaired by: **Prof. Petras Punys** (Vytautas Magnus University, Kaunas; Lithuanian Hydropower Association)::

16:50	**L. Jurevičius** (Vytautas Magnus University, Kaunas): *Remote assessment of the impact of a large HPP on the fish spawning sites*
17:10	**P. Augustyn** (PROCOM System SA): *Effectiveness assessment of electric fish barriers basing on tests in the Czech Republic, Belgium and Poland* (PL)
17:30	**B. Pelikan** (Prof. em., BOKU) *Fishlift® - an innovative fish-sluice system with an integrated turbine unit*
17:50	**Ł. Kalina** (IOZE, Kielce): *Active fish passages - experience following from the first implementations* (PL)
18:15	**Closing of the Conference**

15 October 2021

8:30	**Departure to Żarnowiec Hydropower Plant (Grano hotel)**
10:00	**Study visit to Żarnowiec Hydropower Plant**
13:00	**Farewell dinner for the study visit participants**
15:30	**Arrival to Gdansk (grano hotel)**

Conference applications

Participation in the Conference requires registration and payment of the conference fee. Till Monday October 11th evening you can register online, using the ***http://hydroforum.tew.pl/index.php/en/*** website or by sending the completed registration form at the following address**: Biuro Towarzystwa Elektrowni Wodnych, ul. Piaskowa 18, 84-240 Reda, Poland**, phone: +48 58 678 79 51, e-mail: ***biuro@tew.pl***. Conference documents are available from also the ***hydroforum.tew.pl, www.trmew.pl*** and ***www.imp.gda.pl*** websites. After October 11th registration will be possible exclusively at the conference registration desk. Please be informed that we are no more able to guarantee the complete set of conference materials for the presions that have not registered so far.

The completed registration form will be the basis for issuing an invoice. The following fees apply (including VAT, €)

on-site participants	
basic fee:	**250**
on-line participants	
basic fee:	**135**

The fee shall be paid at the TEW account, according to the invoice received. The conference fee covers participation costs, including the proceedings and the conference dinner at the end of the first day. The hotel costs are to be covered by the delegates on an individual basis.

Conference sessions

With few exceptionsthe gross time of 20 minutes has been scheduled for each speaker. However, after accounting for introduction by the session chairman and a brief discussion, we assume that each presentation should take no more than 12 to 15 minutes. In two case (the opening lecture and the presentation by Prof. W.Majewski) 30 minutes have been assigned. Additionally, 25 and 20 minutes net time has been assigned for two presentations by Voith company.

Each speaker will have the conference projector and computer with *MS Power Point* software at his disposal. In order to streamline the Conference debate the speakers are asked to send their presentations in advance at the *steller@imp.gda.pl* address. It will be also possible to submit the presentation file to the Organisers directly before the confererence or during the coffee breaks. However, please, do not wait with uploading your presentation till the very last moment. In view of the simultaneous interpretation, please, speak clearly and not too swiftly to the mike. Due to the screen size , the 4:3 slode aspect ratio is preferred.

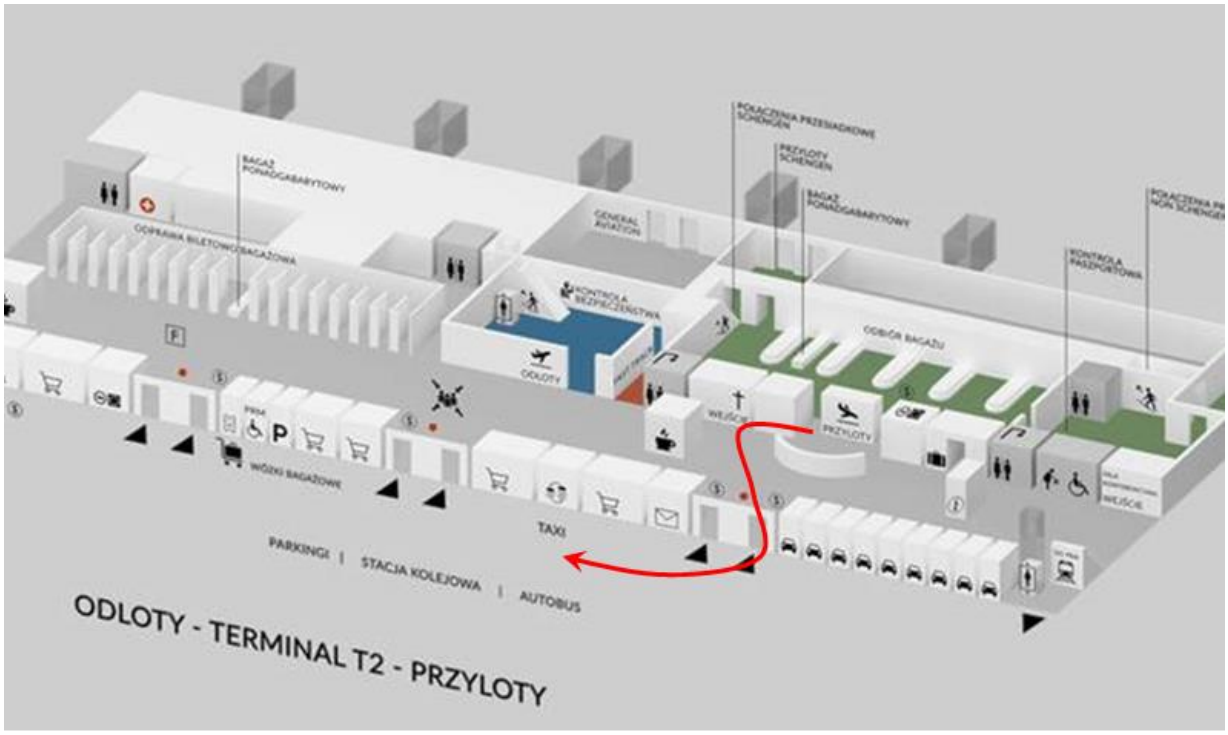
Conference venue and logistics

Choosing Gdansk for the Jubilee Edition of Polish Hydropower Conferences is not incidental as Szewalski Institute of Fluid-Flow Machinery is exactly the site where the idea of HYDROFORUM conferences was born as early as 1973. Gdansk, a Baltic Sea harbour city with over 1000 year long history, is easily accessible from numerous European airports. The A1 highway connects the city with central Poland and the southern border of the country whereas good railway connection with Warsaw and Poznan is another logistic advantage of fundamental significance.

The simplest way to reach the hotel from the airport is taking taxi. The distance is about 16 km and the Neptun taxi Corporation (phone: 196 86) has its taxi stop just in front of terminal 2 which you'll use when leaving the airport. We recommend using this form of transport especially after 22:30. Following the Corporation the travel cost to the hotel on Sunday night should be about 80 zloty (well below 20 euros). Credit and debt cards are accepted. You can also use the Pomararanian Metropolitan Railway (PKM) which will bring you to the Gdansk Wrzeszcz Railway Station. Then you have to change for a train going to the Main Railway Station (Gdansk Glówny) and continue by tram 8 or 9. Usually the better option is to go to the tram line and use tram no. 9 directly to the hotel. Alternatively, you can use bus no. 110 and 122 which will bring you to the Galeria Baltycka bus stop. Then you have to change to tram no. 9 as described before. The last bus starts at 22:46 and the travel takes some 20 minutes. The tickets can be acquired in ticket machines and by means of mobile ticket applications, such as *MPay*, *GoPay*, *SkyCash* and *Mobilet*. The bus and tram tickets are usually sold also by the drivers.

Due to high interest in our event, the Conference venue has been moved from the IMP PAN to Gdansk University of Technology [GUT], located in Wrzeszcz [Vzheshch] district of Gdansk, in direct neighbourhood of the Institute, on the left side of the historical Great Avenue, named Aleja Zwycięstwa (Victory Avenue) after WWII. The Conference will debate in the GUT Main Hall at the second floor of the historical Main Building, ul. G. Narutowicza 11/12. The delegates coming with their own cars to the venue can use the GUT parking place at Fiszera Street (co-ordinates:54.373369, 18.6160294). Please let the parking staff know that you are a HYDROFORUM delegate. A good option is to put a sheet of paper with HYDROFORUM logo and name behind the car windshield.. Otherwise, it is recommended to use the public transport means. The tram travel from the historical centre of Gdansk to the Conference venue takes no more than 20 minutes.

Gdansk University of Technology was established in 1945 as a Polish technical university continuing tradition and using resources of famous *Technische Hochschule (zu) Danzig*, established as early as 1904. Till previous decade GUT was the only Polish university with a hydraulic turbine laboratory. Numerous GUT graduates and professors have contributed substantially to developing Polish hydropower sector, just to mention Professor A. Hoffmann, and K. Pomianowski, but also W. Balcerski, M. Broszko, W. Krzyżanowski and others, including K. Steller – the initiator of HYDROFORUM Conference series and a multiyear head of the Department of Dynamics of Liquids at the IMP PAN.



Lech Walesa Airport. Exit from terminal 2 with the taxi stop location

An excerpt of the Gdansk University of Technology campus.
1 – GUT Main Building, P- Car parking at ul. Fiszera Street.

Hotel Grano zlokalizowany jest na Wyspie Spichrzów

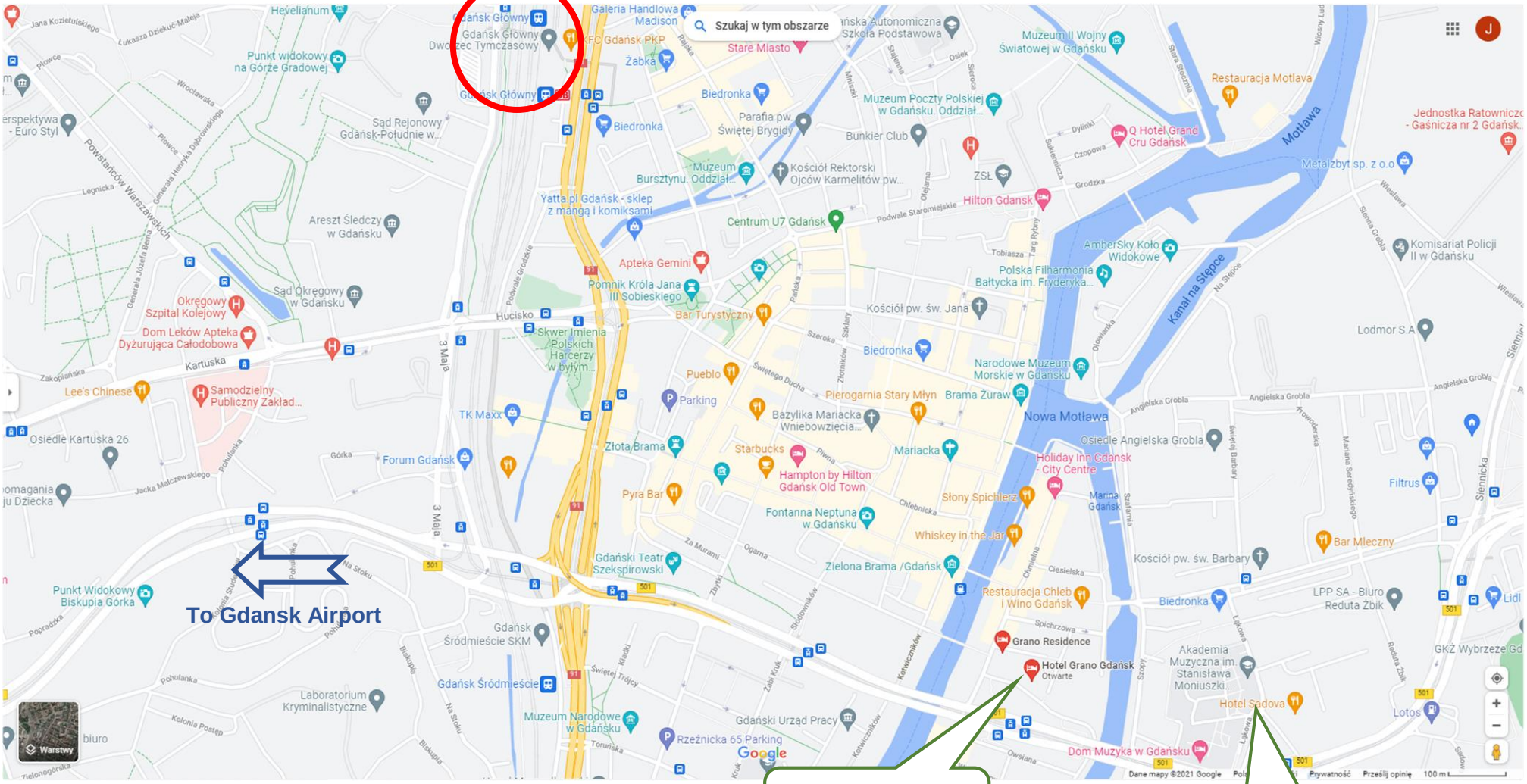
Hotel Dom Muzyka mieści się w budynku Akademii Muzycznej (dawne koszary piechoty pruskiej)

Hotel rooms have been booked by Conference organisers in *Grano* and *Dom Muzyka* (Musician's House) hotels. Hotel addresses are ul. Pszenna 3, *https://www.granohotels.pl/hotelgrano*, and ul. Łąkowa 1-2, *http://dommuzyka.pl/,* respectively. Both hotels are localised in direct neighbourhood of the historical centre of Gdansk, close to the tram lines 8 and 9. Both lines can be used to access the conference venue. No tram change is needed if you use line 9. The *Grano* hotel will host also the reception of the Polish Hydropower Association and the Conference Dinner one day later. It is also from here that the two hour guided City walk will start at 16:00 on October 12th..

HYDRO FORUM

To IMP PAN and Gdansk University of Technology
Trams 3, 6, 9, 12

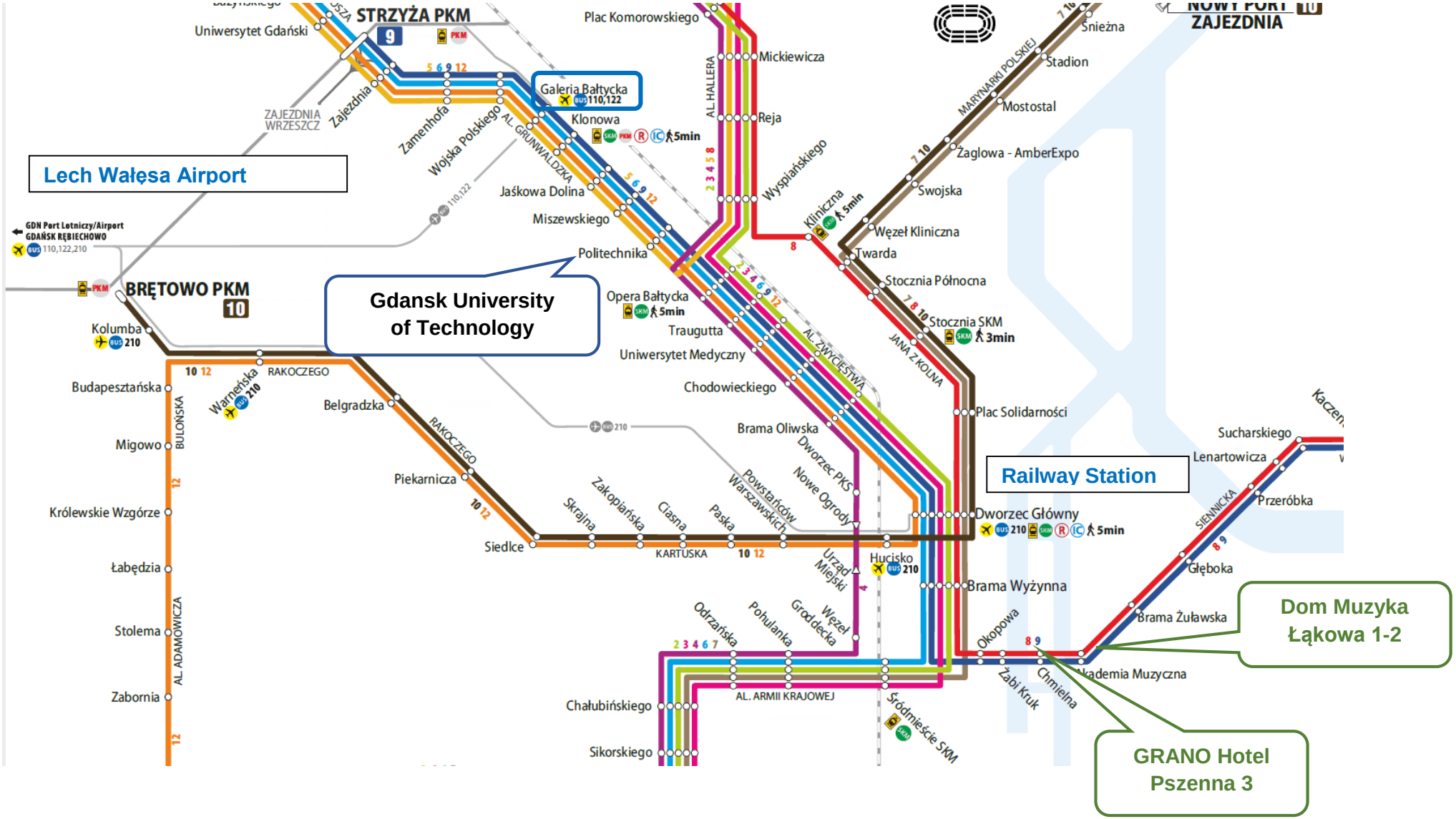
Gdansk Railway Station



To Gdansk Airport

GRANO Hotel
Pszenna 3

Dom Muzyka
Łąkowa 1-2



An excerpt of the ZTM Gdańsk tram network map

Honorary Committee

Andrzej Adamczyk	Polish Minister of Infrastructure
Jean-Jacques Fry	Chairman of the European Club of ICOLD (EuroCOLD), Hydropower Europe, Deputy Co-ordinator
Marek Gróbarczyk	Secretatary of State in the Ministry of Infrastructure, Government Proxy on water management as well as maritime and water management projects
Zbigniew Gryglas	former Undersecretary of State in the Polish Ministry of State Assets
Michał Karlikowski	PGE EO SA, Chairman of the Board
Jan Kiciński	Institute of Fluid Flow Machinery, Pol.Ac.Sci., Director, corresponding member of the Polish Academy of Sciences
Ewa Malicka	Polish Association for Small Hydropower Development, President
Dariusz Mikielewicz	Gdansk University of Technology, Prorector on Organisation and Development
Petras Punys	The Vytautas Magnus University, Kaunas, Lithuania, Professor Litewskie Towarzystwo Energetyki Wodnej, Prezes honorowy
Tadeusz Sobolewski	PGE EO, Board Adviser; TEW Member of the Board
Piotr Szymczak	Association of Polish Electrical Engineers, President West Pomeranian University of Technology, Szczecin

Organising Committee

Janusz Steller	IMP PAN, research fellow; TEW, President (Chairman of the Committee),
Henryka Stachowicz	TEW, Deputy President; Executive Director (Conference Secretary)
Ewa Domke	IMP PAN, Director's Proxy on International Collaboration and Project Management
Tomasz Dudkiewicz	Voith Group, Regional Marketing Manager, Division Hydro
Zbigniew Krzemianowski	IMP PAN, senior specialist
Ewa Kwast	Norwegian Energy Partners (NORWEP) Energy Adviser Poland and Baltics
Michał Lis	Polish Association for Hydropower Development "Energetyka Wodna", Executive Editor
Mariusz Miler	Gdansk University of Technology, Chancellor
Grażyna Filipczuk-Szester	Foundation of Energy Saving in Gdansk, Deputy President
Edward Ziaja	Institute of Power Systems Automation Association of Polish Electrical Engineers, Power Engineering Section

Scientific Committee

Prof. Adam Adamkowski	Institute of Fluid-Flow Machinery, Pol. Ac. Sci., Gdansk, Poland
Prof. Andrzej Błaszczyk	P.B.W. HYDRO-POMP Sp. z o. o., Łódź
Dr Jean-Jacques Fry	International Committee on Large Dams (European Club HYDROPOWER Europe Project
Prof. Wojciech Majewski	Institute of Meteorology and Water Management, National Research Institute, Warsaw
Prof. Bernhard Pelikan	BOKU University, Vienna, Professor emeritus
Prof. Petras Punys	The Vytautas Magnus University, Kaunas, Lithuania

Instytut OZE

Państwowe Gospodarstwo Wodne Wody Polskie

AQUA TECH

PROCOM SYSTEM

VOITH