



Hydropower solutions for developing and emerging countries

D6.4

Report on business cooperation study tour



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Name	Organization
<i>Ewa Malicka¹, Michał Lis¹, Dominika Wójtowicz¹, Bernhard Pelikan², Ingo Ball³</i>	<i>¹TRMEW, FN, WIP</i>

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1 Introduction

HYPOSO is a multi-approach project to tackle several objectives: identification and mapping of the European hydropower industry, hydropower stakeholders in the HYPOSO target countries, education of new hydropower experts through capacity building activities and bringing together relevant actors from the EU hydropower sector with stakeholders in the target countries. Interaction with stakeholders is therefore an integral part of the activities, as workshops and interviews with national/local stakeholders were envisaged in all target countries which are outside the European Union, namely in Bolivia, Colombia, and Ecuador in Latin America, and in Cameroon and Uganda in Africa. Additionally, business cooperation study tour for African and Latin American stakeholders was envisaged to visit European manufacturers, research institutes and reference hydropower plants.

2 Information about Deliverable

This deliverable provides information on business cooperation study tour for African and Latin American stakeholders, organised in line with the description of Task 6.2. The deliverable describes the details of the itinerary of this study tour including the details of visits to manufacturers, research institutes and hydropower plants in Germany, Austria, Italy, and the Netherlands.

2.1 Objectives

WP6 is dedicated to bringing together European hydropower industry representatives with local stakeholders and the aim of this work package is to accelerate the market uptake of EU hydropower technologies in the target countries. One of the tools to achieve this objective is Task 6.2 - Business cooperation study tour for African and Latin American stakeholders, with the aim of bringing together potential business partners with the European hydropower industry. According to the Task 6.2 description, a 7–10-day study tour was planned to be organized, in which selected African and Latin American stakeholders, especially project developers, investors and multipliers were to visit various European manufacturers, research institutes and reference hydropower plants, to get information on latest European hydropower technologies. The countries and places to be visited were to be selected after results of the business case studies were available to choose the manufacturers and sites to suit the size and type of sites selected as case studies. The participants invited for the study tour were to be selected by the local partners in consultation with the WP6 leader.

2.2 Overview

The HYPOSO Study Tour was organised by Michał Lis and Dominika Wójtowicz (TRMEW) with support of Bernhard Pelikan (Frosio Next). They were responsible for Study Tour organisation and leading the tour around the chosen European countries. Besides, the organizational team included two professional drivers. Other project partners involved in organisation of the Study

Tour included Ingo Ball (WIP) Renewable Energies assisting in obtaining visas by participants, Miroslav Marenc from IHE Delft organising the Final Event and Ewa Malicka (overall monitoring).

The Study Tour lasted eleven days, from 3 to 13 May, 2023, and took place in four European countries: Germany, Austria, Italy and the Netherlands. Eight site visits at hydropower plants were organised (Jochenstein, Vöcklabruck, Obervellach II, St. Anton, Wiesen, Sellrain, Fotsch, Möhne) as well as nine visits at headquarters or production facilities of hydropower equipment producers (Global Hydro, Voith Hydro, Gugler Water Turbines, Andritz Hydro, Braun Maschinenfabrik, Troyer, Wild Metal, TRM Tiroler Rohre GmbH, Ossberger). The group stayed in nine cities and travelled around 2,500 kilometres. The organisers hosted 24 guests from Cameroon (6 participants), Uganda (5 participants), Bolivia (6 participants), Ecuador (2 participants) and Colombia (5 participants). All of them were directly connected with the hydropower sector in the target countries, in positions of presidents or general directors of hydropower plants operator companies, HYPOSO pilot sites owners, project developers, general managers or projects managers, lord mayors, civil engineers and energy planning specialists. The local partner of the HYPOSO project (Joseph Kenfack from Cameroon) also joined the Study Tour. For the full list of participants see Annex 2.5.2.

The initial lists of participants provided by local partners included 7-8 participants from each target country, as well as participants placed on waiting lists. However, many participants faced enormous problems in obtaining visas, despite the fact they started applying well ahead of time and despite the great efforts on the part of the HYPOSO project coordinator and the Study Tour organisers to provide necessary documents and support for participants as well as contacting the relevant embassies.

Finally, some participants were refused to obtain visas, and some obtained it after the Study Tour started so they were joining the group during the Tour, therefore, the number of participants changed dynamically throughout the time of the Study Tour.

Moreover, a low number of participants from Ecuador, resulted from the political developments prior to the Study Tour and changes to positions in hydropower-related companies and government institutions that made previous lists of participants obsolete.

2.2.1 Day 1, Wednesday, 3rd May 2023

The first day was intended for the HYPOSO Study Tour participants arrival to Munich. A reception desk was prepared at the hotel lobby, where participants were welcomed, informed on the details of the Study Tour and given welcome kits. After the check-in, the participants were guided to the city centre of Munich for lunch. After the meal, it was time for the participants to get to know each other during a short walk around the old city. In the evening, when all participants who were to arrive that day were present at the hotel, the Welcome Dinner took place. During the inauguration of the Study Tour, the participants were

officially welcomed by Michał Lis, the Study Tour organiser from TRMEW and Ingo Ball, the HYPOSO project coordinator from WIP.



Figure 1: HYPOSO Study Tour reception desk at the Leonardo hotel lobby ready for participants' arrival

2.2.2 Day 2, Thursday, 4th May 2023

The second day of HYPOSO Study Tour started with sightseeing of the Jochenstein hydropower plant, the facility with eye-catching architecture, 132 MW capacity and 850 GWh annual production, operated by Verbund AG. Participants were guided at the hydropower plant by Ewald Karl, Sales Director from Global Hydro Energy company.



Figure 2: Site visit at Jochenstein hydropower plant (on the left: general view of the hydropower plant, on the right: participants at the visitor centre in the hydropower plant building)

The group also visited the companies Global Hydro Energy and Voith Hydro, where they learned about water to wire solutions, remote controlling systems, water turbines designed for small hydropower, companies references, products and possibilities of cooperation. They had also an opportunity to see the production facilities in operation.

The hosts were: mentioned above Ewald Karl, Thomas Sageder, Area Sales Manager Europe, Natalia Silva Vera, Sales Coordinator LATAM from Global Hydro Energy and Radu Cârja, Head of Division Small Hydro, Stuart King, head of Sales and Proposals and Sebastian Mayerhofer, Head of Sales - Division Small Hydro from Voith Hydro.



Figure 3: Company visit at Global Hydro (on the left: company presentation, on the right: participants during the factory visit)



Figure 4: Company visit at Voith Hydro (on the left: participants during the factory visit, on the right: commemorative group photo)

2.2.3 Day 3, Friday, 5th May 2023

On the third day the route took the group to GUGLER Water Turbines GmbH, where the participants learned about hydropower units manufactured by the company and examples of their application in Latin America and Africa. Then, the group visited the newest ANDRITZ Hydro laboratory in Linz, where hydro units are carefully tested to guarantee the highest efficiency for the most demanding customers.



Figure 5: Company visits (on the left: company presentation at Gugler Water Turbines, on the right: commemorative group photo at Andritz Hydro laboratory)

The third point of visit on the route that day was Braun Maschinenfabrik company, presenting their wide offer of the highest quality hydropower equipment, including trash rack cleaners, flaps and gates. It was interesting to visit outstanding production facility with small historical exhibition, commemorating the times of Emperor Franz Joseph I, who visited this factory in 1890 year (where files were produced at that time).



Figure 6: Company visit at Braun Maschinenfabrik (on the left: participants during the factory visit, on the right: commemorative group photo at historical exhibition)

The last thematic visit on that day was at 950 kW small hydropower plant owned by Braun family and built in 2019. The plant represents modern, sustainable and reflecting the latest developments way of hydropower engineering.



Figure 7: Site visit at Vöcklabruck hydropower plant (on the left: general view of the hydropower plant, on the right: participants attending short hydropower plant overview)

The participants had a chance to network with Alois Gugler, CEO, Gerhard Gugler, Technical Director, Lukas Peer, Sales Manager, Florian Altendorfer, Sales Manager from Gugler Water Turbines, Markus Schneeberger, Chief Technology Officer, Peter Grafenberger, R&D Manager from Andritz Hydro, Lennart M. Braun, Chief Executive Officer and Alfred Mayr, Senior Sales Expert from Braun Maschinenfabrik. At the end of the day the participants continued networking during the short walk around Salzburg city centre.

2.2.4 Day 4, Saturday, 6th May 2023

HYPOSO Study Tour group spent the whole fourth day visiting Obervellach II hydropower plant, with installed capacity of 37 MW and 125 GWh annual production, owned by ÖBB, which is now under construction. Participants were lucky to be in a perfect moment in time to see all equipment prepared in a powerhouse for installation and walk inside the surge tank cavern, which will be filled with water during hydropower plant operation. As the layout of the power plant with three intakes, penstocks, powerhouse, balancing pond and additional SHP is quite complicated and spread over a large area, it took a while to understand this sophisticated design of the hydrotechnical project. The interesting fact is that the electricity generated in this plant will be fully used for Austrian railway, which has another frequency (16,7 Hz) that usual in the electrical grid. In this case the investor decided to build a second small hydropower plant to fulfil the internal electrical energy needs of the bigger plant. Clemens Oberlechner, Construction Manager (and other representatives) from OBB Infra, presented the hydropower plant to participants and organised their transfer by buses around the whole facility.



Figure 8: Site visit at Obervellach II hydropower plant (on the left: general view of the hydropower plant intake, on the right: general view of the hydropower plant powerhouse)



Figure 9: Site visit at Obervellach II hydropower plant (on the left: commemorative group photo at underground surge tank, in the middle: general view of the underground surge tank, on the right: general view of the hydropower plant penstock and transformer station)

2.2.5 Day 5, Sunday, 7th May 2023

On the fifth day, the group moved to Italy and had an opportunity to visit St. Anton hydropower plant, equipped with hydro units with a capacity of 90 MW, produced by Troyer. This modern, flexible hydropower plant replaced the previous one, which was taken out of operation. New concept which included underground gallery performing the function of the balancing tank, solved some previous problems with hydropeaking in Talfer river, causing danger for aquatic life and recreational use of river basin. The underground gallery has been designed to be open for visitors, who can have an unforgettable walk on a special platform above the water level and admire a colourful light show. The group was hosted by Eisackwerk, owner of this hydropower plant and Rafael Farfan, Sales Engineer from Troyer. At the end of the day the participants had time for networking during a short walk around Bolzano city centre.



Figure 10: Site visit at St. Anton hydropower plant (on the left: general view of the hydropower plant underground powerhouse, on the right: general view of the underground surge tank)

2.2.6 Day 6, Monday, 8th May 2023

The sixth day was dedicated to visiting Troyer company, where the group could take a closer look at the whole production process of high-quality hydropower turbines. The participants could also learn about the challenges concerning operation of hydropower plants on rivers with glacier characteristic, carrying increased amount of bedrock material.



Figure 11: Company visit at Troyer (on the left: general view of company headquarters, on the right: participants during the factory visit)

An unexpected additional point of this day was a visit to a small hydropower plant Wiesen, owned by Wiesen Konsortial and equipped with Troyer's three Francis turbines, with a total capacity of 3295 kW. Each of them has a different output power and can work independently or they can operate together in any configuration, which enables the SHP to operate in optimal range and achieve the maximum production, due to variable river flows.



Figure 12: Site visit at Wiesen hydropower plant (on the left: general view of the hydropower plant powerhouse, on the right: inside view of the hydropower plant powerhouse)

The last point of the day was a visit in Wild Metal company. The modern headquarters was an ideal place to admire the metal artwork of company's specialists, producing water intakes systems which feature many smart details, ensuring not to miss any drop of water.

The group had a chance for business talks with Norbert Troyer, Sales Manager, Federico Bruccoleri Marketing Expert from Troyer and Markus Wild, CEO and Daniel Polig, Project Manager from Wild Metal.



Figure 13: Company visit at Wild Metal (on the left: general view of company headquarters, on the right: participants during the factory visit)

2.2.7 Day 7, Tuesday, 9th May 2023

At the seventh day of the HYPOSO Study Tour a visit at TRM Tiroler Rohre GmbH was planned. The company is one of the biggest European producers of ductile iron pipes. During the tour, the group had a possibility to learn about the whole process of producing pipes from raw material to a high-quality final product, which could be utilised up to 100 years. What is interesting, TRM works in circular economy, which means the company uses scrap to produce pipes, so in some cases old pipes can be used for production of the new ones.



Figure 14: Company visit at TRM Tiroler Rohre (on the left: commemorative group photo, on the right: pipes in stockpile ready for shipment)

The next points on the route were Sellrain and Fotsch SHPs, which are equipped with TRM's pipes and utilise the potential of Melach and Fotscherbach streams. The Sellrain hydropower with approx. 12 MW capacity delivered by two 4-jet Pelton turbines consists of two water intakes (delivered by Wild Metal), pipelines of approximately 9,24 km and the power plant, which is located in a cavern. The construction of the power plant began in autumn 2021 and the cost of this investment is approximately € 52.0 million net. The other visited plant, SHP Fotsch, is equipped with 2,23 km pipeline and 5-jet Pelton turbine with a capacity of 2 MW. Sellrain SHP utilises water used earlier by Fotsch SHP. Generators to these power plants were delivered by Nidec Leroy-Somer and AEM-Anhaltische Elektromotorenwerk Dessau. These small hydropower plants has been developed as an initiative of a group including 6 local communities.

The Study Tour participants networked with Thomas Fritz, International Sales Manager from TRM and Charly Jansenberger, representing Sellrain and Fotsch SHPs.



Figure 15: Site visit at Sellrain hydropower plant (on the left: general view of the hydropower plant intake, on the right: general view of the hydropower plant underground powerhouse)



Figure 16: Site visit at Fotsch hydropower plant (on the left: hydropower generator, in the middle: hydropower water outlet, on the right: general view of the hydropower plant construction site)

2.2.8 Day 8, Wednesday, 10th May 2023

After networking in Ettal, the Study Tour group took a route to Weißenburg in Middle Franconia, where the headquarters of Ossberger GmbH + Co. KG company is located. During an interesting presentation, participants could learn about the scope of the company's production profile and patented Crossflow Turbines, which are Ossberger's core business. The simplicity of this kind of hydro turbines with only three moving parts ensures minimum maintenance and maximum technical reliability, which is a crucial factor for hydropower projects located in remote areas. What is more, Crossflow Turbines require 5% of the design water volume to start operation and cope with fluctuating water volumes. Therefore, they are perfect solution for off-grid implementations. After theoretical introduction, the group was invited to the factory, where participants could see individual stages of turbine's production, including preparation of initial components, results of complicated welding process and finished products ready for shipment worldwide.

The group was hosted by Dr. Karl- Friedrich Ossberger, business owner, Jessica Mayer, Marketing Expert, Markus Sauerbeck, Area Sales Manager and Holger Franke, Sales Manager from Ossberger company.



Figure 17: Company visit at Ossberger (on the left: company presentation, on the right: commemorative group photo)

2.2.9 Day 9, Thursday, 11th May 2023

The ninth day of HYPOSO Study Tour was mainly a “travel day” due to the fact that Study Tour group had to reach Delft in the Netherlands, which was the final point of the tour. Nevertheless, one important visit was organised on that day, namely the visit to Möhne Dam operating by Ruhrverband, which used to be one of the largest reservoirs in Europe. It was put into operation in 1913, after merely five years of construction work. The Möhne Reservoir used to be the backbone of the Ruhr area’s water supply and still accounts for 28% of total storage capacity, thus making an essential contribution to controlling the River Ruhr’s runoff. The masonry dam with its slightly arched shape is made of quarry stones. It is 650 metres long, up to 40 metres high and can hold up to 134.5 m³ metres of water. This dam was breached by RAF Lancaster Bombers (“The Dambusters”) during Operation Chastise on the night of 16–17 May 1943, together with the Edersee dam in northern Hesse. Bouncing bombs had been constructed in that way, they were able to skip over the protective nets that hung in the water. A 77 m by 22 m hole was blown in the dam with the resulting flood wave killing at least 1,579 people. The Möhne Dam was repaired by 23 September 1943. Since the original hydropower station was completely destroyed in 1943, a replacement had to be built. The new main power station was built between 1950 and 1954 about 250 m downstream the dam, on the left bank of the compensation pond. A maximum of 24 m³/s flow is supplied to two vertical axis Kaplan turbines, which can generate up to 12.9 GWh of electricity on an annual average with generator outputs of 3,500 kW each. Nowadays Möhne hydropower plant is operating as peaking power plant, adjusting production to the current demand for energy in the electrical grid, ensuring production at a time when energy prices are at their highest point. What is surprising, the hydropower plant does not operate nowadays with its installed 7 MW capacity, due to the fact of unfavourable rates for facilities over 5 MW, so it is more profitable for the operator to limit its capacity.

The group was guided by Ludger Harder, Operations Manager from Ruhrverband.



Figure 18: Site visit at Möhne hydropower plant (on the left: general view of the hydropower plant powerhouse, on the right: commemorative group photo)

2.2.10 Day 10, Friday, 12th May 2023

The last day of the HYPOSO Study Tour was wholly devoted to participation in the HYPOSO Final Event organised by Miroslav Marencé and Ingo Ball at IHE Delft Institute for Water Education. The early morning was reserved for B2B talks, matchmaking and mini exhibition, where IOZE hydro brand and Turbulent company were presenting their products. The audience was welcomed by Eddy Moors, Director of IHE Delft. After the introduction performed by Ingo Ball and Miroslav Marencé, a keynote speech was given by H  l  ne Chraye, Deputy Director Clean Planet and Head of Unit Clean Energy Transition, DG Research & Innovation, European Commission. Then a second presentation was delivered by Dirk Hendricks from EREF about European efforts to support the hydropower sector.

In the next part of conference participants learned about the HYPOSO project results and took part in a concluding discussion. Petras Punys from VDU presented the HYPOSO Map, a useful tool for academia and the industry. Capacity building, which was a part of HYPOSO project was summarised by Miroslav Marenc  . The next presentation concerning the HYPOSO project was executed by Bernhard Pelikan from Frosio Next. He described and commented on the 15 pilot sites in five countries. The last presentation “Framework conditions for small hydropower – experiences from three continents” was delivered by Ewa Malicka (TRMEW).

Next, the following experts from Latin America, Africa and Europe were invited to the discussion panel: Sergio G  mez Echeverri, Project Manager from Consultora End  mica S.A.S., Jos   Estuardo Jara Alvear, Energy planning specialist / Coordinator Research Group CIENER from CELEC EP / Universidad del Azuay, Jose Maria Romay, Board Member from BOCOLD, Benard Mbaine, Developer from Sebei Hydro Uganda Limited, Valerie Nkue, Director of Renewable Energy from Ministry of Energy and Water and Bernhard Pelikan from Frosio Next. During the discussion panel, experts presented current situation in hydropower sectors in countries of their origin, underlining issues limiting the development of this industry. Similarly as in Europe, one of the most important obstacles is a time-consuming and complicated administrative procedure, which requires a level of complexity for small hydropower plants as well as for large investments. The recommendations included proposals for an international exchange of experience in the field of investing in small hydropower as well as training tours for representatives of the public sector responsible for issuing permits for the construction of small hydropower plants.



Figure 19: The Final Event (on the left: general view of IHE Delft, on the right: discussion panel)

2.3 Discussion

The main conclusion from the Study Tour and Final Event shows that the end of the HYPOSO project is the starting point for many interesting activities identified around Latin America and Africa during the project and the beginning of wider cooperation between stakeholders from target countries and European hydropower industry. Moreover, there is clearly noticeable need for international cooperation in order to facilitate the development of hydropower worldwide. Established and maintained business contacts during the HYPOSO Study tour will surely be continued in the future. The results of visits in the headquarters of hydropower equipment producers and at hydropower sites as well as matchmaking done between participants showed a significant exchange of knowledge and experiences on many thematic areas. In personal comments, participants mentioned that they were interested in establishing cooperation with European companies and in buying presented equipment to their projects ongoing. Individual exchange of knowledge about investment and operation stage of hydropower projects between participants was also noticeable, which confirms the strong need for additional expert services, concerning hydro power plant design. Additionally, the participants could compare the standard of small hydropower plants design, building process and exploitation with their internal experiences. All visited hydropower plants were rated very high due to their quality, ingenuity of execution and adaptation to the needs of regular technical visits.

2.4 Conclusions and recommendations

The HYPOSO Study Tour took place within the planned time frame and all planned points of the program were implemented. What is more, the Study Tour was enriched by two additional, unplanned program points, which were site visits at Vöcklabruck SHP and Wiesen SHP without affecting the course of the trip. The entire tour, as well as individual visits, took place in compliance with the relevant safety rules, thanks to which the trip was completely safe, without any incidents and problems. During the Study Tour various activities allowing participants to spend time in an active and engaging way were organised, enabling learning via participation in company presentations, site visits, discussions, and networking. Time for business meetings and matchmaking was also provided. Organisers were available to the participants throughout

the tour, helping to meet the participants' current needs related to participation in the Study Tour.

Organisers achieved positive feedback from the participants about the Study Tour, confirming the comprehensive preparation of the tour, including: assistance in getting from the airport to the first hotel, itinerary, content selection of welcome kits, quality of the information in Study Tour brochure, daily organisational commitment, interesting selection of companies and hydropower plants to visit, comfortable accommodation, a variety of meals, arrangement of free time and networking, comfortable travel conditions and assistance to those participants who came after the Study Tour started.

The main organisational problem concerning the Study Tour included difficult and long visa procedures, impeding the participation of many stakeholders selected for the Tour. As mentioned before, many participants couldn't obtain visas on time, despite submitting the applications in advance or were refused to obtain visas at all. As a result, some of the selected participants joined the group later in the trip and some stakeholders couldn't participate at all.

During the Study Tour there was an interest in organising further study tours for participants from Latin America. There were considering two kinds of study tours. The first one would be educational tours for representatives of public administration entities, involved in issuing permissions for hydropower plant investments to learn about the best practices in hydropower in Europe. The second type included business tours for representatives of hydropower operators to visit certain hydropower equipment producers, necessary to find the best solutions for their schemes. It shows that the HYPOSO project with its task of the Business Cooperation Study Tour organisation could be replicated in the future due to considerable interest about this kind of knowledge exchange and b2b matchmaking. The results of the HYPOSO Study Tour are satisfactory, the objectives of the trip were fully met and similar projects are expected to continue in the future.

2.5 Annexes

2.5.1 Programme

To have an impression about the programme of the Study Tour an image of the distributed agenda of the event is shown in Figure 20.



Figure 20: Daily HYPOSO Study Tour programme

2.5.2 Participants

To have an impression about the participants of the HYPOSO Study Tour, the participants' list is shown in Figure 21.

NO.	NAME	COMPANY	POSITION	COUNTRY
1	José Rafael Armijos Burneo	CONSTRUCTORA NACIONAL S.A.	PRESIDENT	Ecuador
2	José Estuardo Jara Alvear	CELEC EP / Universidad del Azuay	Energy planning specialist / Coordinator Research Group CIENER	Ecuador
3	MBAINE Benard	Sebei Hydro Uganda Limited	Developer	Uganda
4	MWIRUMUBI Paul Mugesera	Rwenkuba Electricity Company LTD.	Managing Director	Uganda
5	MUTETWEKA Tusingwire George	Uganda Electricity Generation Company Limited (UEGCL)	CHIEF OPERATIONS OFFICER	Uganda
6	Patrick Ndungu Syayipuma	Rwenzori Hydro PVT	General Manager	Uganda
7	Alvaro Herbas Camacho	Ende Corani	General Manager	Bolivia
8	Cristian Siles Torres	Ende Valle Hermoso	Project Manager	Bolivia
9	Ricardo Aneiva	Ice Ingenieros	Project Manager	Bolivia
10	Rafael Aneiva	Ice Ingenieros	Equipment Manager	Bolivia
11	Gabriela Mercado	Ende Corporacion	Project Manager	Bolivia
12	Jose Maria Romay	Bocold	Committee Board	Bolivia

13	NJINOH NKONDA BERNICE	ENEO Cameroon (Energy of Cameroon)	Civil Engineer	Cameroon
14	ABBO ABOUBAKAR	BELEL COUNCIL	LORD MAYOR	Cameroon
15	KEMLEU TCHABGOU JACQUIS GABRIEL	DSCHANG COUNCIL	LORD MAYOR	Cameroon
16	AHMADOU BOUBA OUMAROU	ARSEL		Cameroon
17	NKUE VALERIE	MINISTRY OF ENERGY AND WATER	Director of Renewable Energy	Cameroon
18	Joseph Kenfack*	SOLARHYDROWATT		Cameroon
19	Walter Ospina Ortiz	ICATER S.A.S	PROJECT MANAGER	Colombia
20	JUAN DIEGO VILLEGAS LANAU	AURES BAJO S.A.S. E.S.P.	MANAGER	Colombia
21	Marlon Andres Londoño Diago	Celsia SA ESP	LIDER GENERATION PROJECTS	Colombia
22	Sergio Gómez Echeverri	CONSULTORA ENDÉMICA S.A.S.	MANAGER	Colombia
23	Leonardo Pérez Álvarez	KASTALIA ENERGY S.A.S	GENERAL MANAGER	Colombia

**local HYPOSO project partner*

Figure 21: List of participants of the HYPOSO Study Tour

2.5.3 Guidebook HYPOSO Business Study Tour

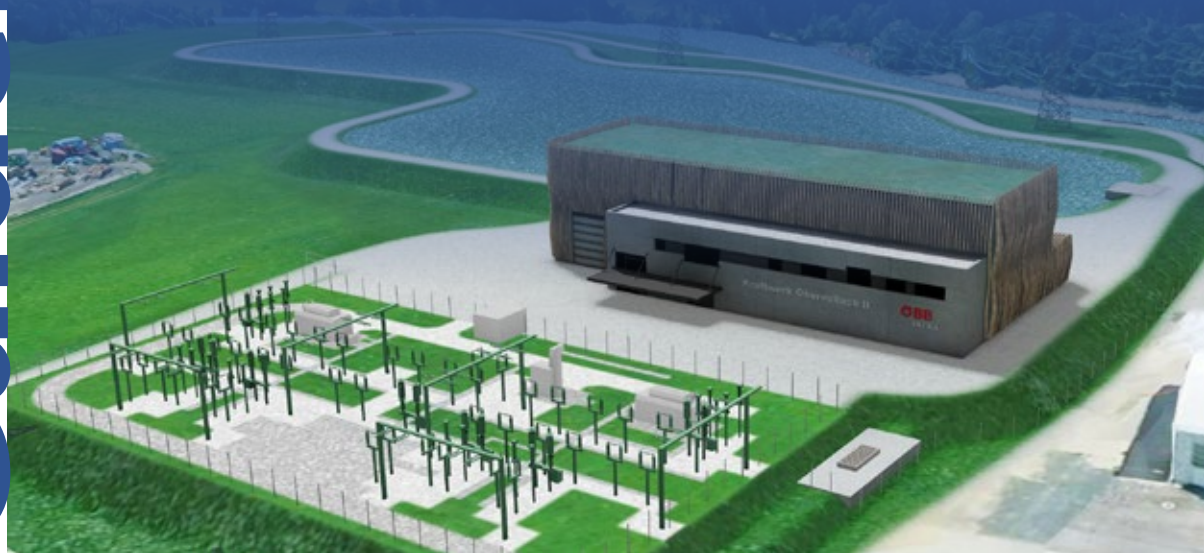
To have an impression about the whole programme of the Study Tour (including companies, hydropower plants and other) Appendix 1 is attached.

Hydropower solutions for developing and emerging countries (HYPOSO)

Guidebook

Munich
Linz
Salzburg
Obervellach
Bolzano
Innsbruck
Sonthofen
Wurzburg
Delft

HYPOSO BUSINESS STUDY TOUR 3–13 May 2023



Organized by:



Organizers:

Ewa Malicka
Dominika Wójtowicz +48 660 768 696
Michał Lis +48 602 122 817
TRMEW Sp. z o.o.

Bernhard Pelikan
FROSIO NEXT S.r.l.

Ingo Ball
WIP Renewable Energies

Miroslav Marence
IHE Delft Institute for Water Education

Local partners:

Bolivia – Andres Gonzales
Universidad Mayor De San Simon (UMSS)

Cameroon – Joseph Kenfack
La Societe Solarhydropwatt Sarl (SHW)

Colombia – Carlos Velasquez
Centro Latinoamericano Para La Pequena Hidroelectrica (CELAPEH)

Ecuador – Patricia Haro, María José Guerra Amán
Escuela Politecnica Nacional (EPN)

Uganda – Dan Marlone Nabutsabi
Hydropower Association Of Uganda Limited (HPAU)

www.hyposo.eu



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Munich
Linz
Salzburg
Obervellach
Bolzano
Innsbruck
Sonthofen
Wurzburg
Delft

Guidebook

**HYPOSO
BUSINESS
STUDY TOUR
3–13 May 2023**

www.hyposo.eu



Foreword

Dear Guests,

on behalf of the HYPOSO project consortium, I am delighted to welcome you to the HYPOSO Business Cooperation Study Tour, where you will have the opportunity to learn about the offerings of leading European hydropower equipment manufacturers, as well as to visit hydropower plants. These include new facilities built to the highest applicable technical and environmental standards (St Anton, Obervellach II, Sellrain, Fotsch), as well as the Jochenstein and Möhne hydropower plants, which boast an interesting history and many years of service to the national electricity systems. The Study Tour will culminate in a Final Event in Delft to summarise the results of the HYPOSO project.

The route of the Study Tour will cross Bavaria, the picturesque alpine areas of Germany, Austria and Italy, the vast lowlands of North Rhine-Westphalia and the Netherlands, leading all the way to the North Sea. During the trip you will visit both large urban centres and charming small towns. Cities such as Munich, Linz, Salzburg, Innsbruck, Würzburg, Bolzano or Delft, known for their rich cultural heritage, hardly need any introduction, while Obervellach, Sonthofen and Ettal should be a pleasant surprise for everyone.

In this brochure you will find all the information you need about the Study Tour: descriptions of the companies hosting the participants, information on the hydropower plants visited and of the places along the route that provide an excellent setting for establishing business relationships, a detailed schedule of the Study Tour and the Final Conference, a list of hotels and practical advice. However, should you have any questions, the organising team remains at your disposal.

I hope that this trip will be a source of many ideas and inspiration for you in the field of construction, modernisation and operation of hydropower plants, and that, thanks to the business contacts made, your investment plans will be put into practice, including equipping your hydropower projects with state-of-the-art equipment to ensure long-term and efficient production of electricity. At the same time, I am firmly convinced that by experiencing European culture and history over the next eleven days, you will return home with a luggage full of unforgettable memories.

Have a great trip!

Ingo Ball

WIP Renewable Energies
HYPOSO Coordinator



A handwritten signature in blue ink that reads "I. Ball".





HYPOSO project

HYPOSO (www.hyposo.eu) is a multi-approach project to tackle several objectives; identification and mapping of the European hydropower industry and hydropower stakeholders in the HYPOSO target countries, education of new hydropower experts through capacity building activities and bringing together relevant actors from the EU hydropower sector with stakeholders in the target countries. Interaction with stakeholders is therefore an integral part of the activities; workshops, capacity building activities and interviews with national/local stakeholders have been or will be held in all target countries, namely Bolivia, Colombia and Ecuador in Latin America and Cameroon and Uganda in Africa.

Hydropower Solutions
HYPOSO

www.hyposo.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 857851.



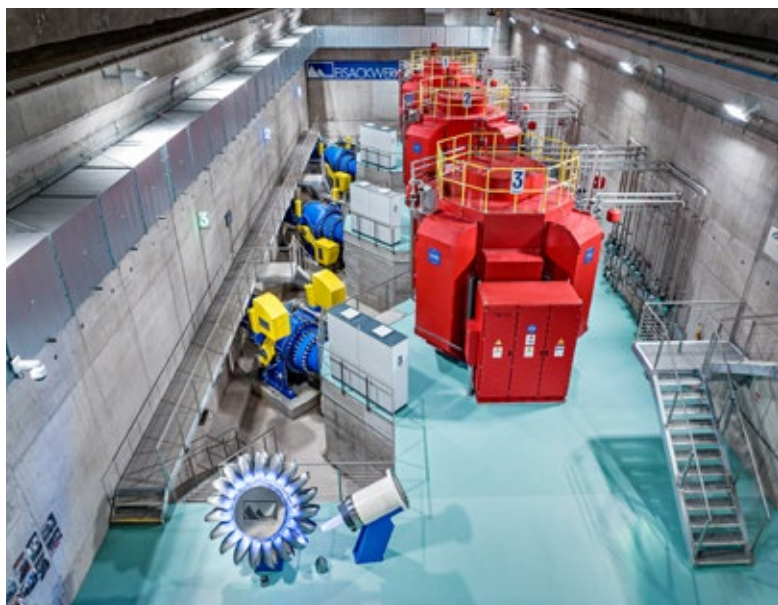
Study Tour

One of the activities carried out within HYPOSO, aimed at bringing together potential business partners with the European hydropower industry, is a 11-day Study Tour, in which selected African and Latin American stakeholders, especially project developers, investors and multipliers will visit several European manufacturers and reference hydropower plants to get information on latest European hydropower technologies. It is planned to visit major manufacturers as well as providers of hydropower solutions in Germany, Austria and Italy.

The manufacturers and the plants have been chosen to suit the size and type of sites selected as case studies in the HYPOSO project and they include providers of comprehensive services, turbines, hydraulic steel structures, pipe systems, control systems, technical equipment and digital support services. As regards the hydropower plants, visits are planned in Jochenstein, St. Anton, Sellrain, Fotsch, Obervellach II and Möhne Dam. The last point of the tour will be a big HYPOSO Final Event at IHE Delft Institute for Water Education. This event will be organized to present the HYPOSO project results and make business contact.

The tour will also include a cultural program including visits to cities such as Munich, Linz, Salzburg, Bolzano and Innsbruck (guided or individual tours). Moreover, the tour participants will have the opportunity to visit Linderhof Palace and its surrounding park, one of the most artistic and stylistically complex ensembles of the 19th century.

Photo credits: HYPOSO archive, iStock, Troyer, Voith Hydro, Wikimedia Commons, Whgler



Itinerary

3 May 2023 (Wednesday)

- Arrival at the hotel in Munich, check in from 14.00
- Lunch at local restaurant
- Munich – networking
- Welcome Dinner at the hotel

I Overnight in Munich (Germany)

4 May 2023 (Thursday)

1. Short stop at Jochenstein HP on the Danube River
2. Business meeting at Global Hydro
3. Business meeting at Voith Hydro GmbH & Co KG
Division Small Hydro VHGE

II Overnight in Linz (Austria)

5 May 2023 (Friday)

4. Business meeting at Gugler Water Turbines
 5. Business meeting at Andritz
 6. Business meeting at Braun Maschinenfabrik
- Salzburg – networking

III Overnight in Anif near Salzburg (Austria)

6 May 2023 (Saturday)

7. Visit to Obervellach II HP

**IV Overnight in Untergratschach
near Obervellach (Austria)**

7 May 2023 (Sunday)

8. Visit to St. Anton HP
- Bolzano – networking

V Overnight in Laives near Bolzano (Italy)

8 May 2023 (Monday)

9. Business meeting at Troyer
 10. Business meeting at Wild Metal
- Innsbruck – networking

VI Overnight in Innsbruck (Austria)

9 May 2023 (Tuesday)

11. Business meeting at TRM
12. Visit to Sellrain SHP
13. Visit to Fotsch SHP

VII Overnight in Sonthofen (Germany)

10 May 2023 (Wednesday)

- Ettal – networking
14. Business meeting at Ossberger

VIII Overnight in Wurzburg (Germany)

11 May 2023 (Thursday)

15. Möhne SHP – training visit/networking

**IX Overnight in Voorburg near Delft
(Netherlands)**

12 May 2023 (Friday)

- HYPOSO Final Event at IHE Delft

**X Overnight in Voorburg near Delft
(Netherlands)**

13 May 2023 (Saturday)

- Breakfast, check out

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HYPOSO

*Organizer reserves the right to make changes to the program.



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Photo credits: Global Hydro, iStock, Google Maps



Hosting companies



2

Global Hydro is a leader in the field of hydropower plant technology. Employees always working team- and solution-oriented. As experts in hydropower, they have the experience and motivation to innovate, think digital and in long-terms to find sustainable solutions for generation and those to come. As a global team, they improve the efficiency and safety of HPP by optimizing the design, implementation processes and operation services. This is how Global Hydro maintains to be a technical leader of the field. The people working at Global Hydro understand the importance of industry for shaping a sustainable future and are ever striving towards excellence in everything they do. We are proud to have created a working environment, in which constant learning and improving is encouraged. To further nourish this cultural aspect in our company, they created the Global Academy. It comprises training videos for employees, partners and customers. It is also a platform for qualifications as well as webinars and e-learning tools.

VOITH

3

The Voith Group is a global technology company. With its broad portfolio of systems, products, services and digital applications, sets standards in the markets of energy, paper, raw materials and transport & automotive. Founded in 1867, the company today has around 21,000 employees, sales of €4.9 billion and locations in over 60 countries worldwide and is thus one of the larger family-owned companies in Europe. The Group Division Voith Hydro is part of the Voith Group and a leading full-line supplier as well as trusted partner for equipping hydropower plants. Voith develops customized, long-term solutions and services for large and small hydro plants all over the world. Its portfolio of products and services covers the entire life cycle and all major components for large and small hydro plants, from generators, turbines, pumps and automation systems, right through to spare parts, maintenance and training services, and digital solutions for intelligent hydropower. We produce all hydropower components at our own sites in Asia, Europe, North and South America. We are also conducting research worldwide into tomorrow's power generation. A one-stop contact person provides you with direct support, and you also have access to our global experts and resources. Thus, we ensure continuity and seamless knowledge transfer to project locations.



4

Gugler Water Turbines GmbH is a family business whose members have been engaged for the last three generations in the development and the supply of water turbines and small hydropower plants. What the Rupert Gugler, created nearly 100 years ago for 30 households, today has global benefits for entire areas. Today, Gugler Water Turbines GmbH is a globally active company, which provides all types of water turbines: Kaplan, Francis and Pelton turbines up to 30 MW per unit, related electro-mechanical equipment for small and medium sized hydro power plants and installs them in existing or new plants. Specialises in the supply



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of turnkey systems including the entire electromechanical equipment for a hydropower plant. Company currently has more than 65 employees and we can count on hundreds of manufacturing specialists. Gugler Water Turbines GmbH supplies also special hydropower turbines, such as micro turbines, container turbines, siphon turbines, gates turbines, turbines for drinking water pipelines on a global basis. For more than 100 years they has been dedicated to the development and construction of water turbines, small hydropower plants and the generation of electricity from hydropower. Now is one of the world's leading suppliers of water turbines in the range from 50 kW to 25 MW.



5

Andritz is an international technology group providing plants, systems, equipment, and services for various industries. The company is one of the technology and global market leaders in the hydropower business, the pulp and paper industry, the metal working and steel industries, and in solid/liquid separation in the municipal and industrial segments. Andritz Hydro is one of the world's leading suppliers of electromechanical equipment and services for hydropower stations in the dynamically growing global renewable energy market. Based on 180 years of experience and a global installed capacity of 470 gigawatts, we offer innovative solutions for new and existing hydropower stations, from small hydropower to large-scale plants. State-of-the-art digital solutions, comprehensive services for the operation and maintenance of entire hydropower plants, and turbo generators for the thermal industry complete the portfolio.



6

Braun located in Vöcklabruck has been engaging with products and machines for processing of different materials since 1848. In 1965, the company entered the technology of cut-off grinding with abrasive cutting discs. The quest for technological leadership prompted Braun to intensify the further development of tools and innovative cutting and separating processes in order to be able to offer its customers the best possible separation and cut off solution. Today, the technology leader's range of products includes hydropower steel constructions, steel cutting and grinding machines as well as tailor made solutions for decommissioning and dismantling of nuclear and contaminated facilities. Integrated assistance from conception to revitalization, Braun supports you in your projects with concepts, machines and associated tools. In-house engineering, automation and realization guarantees best quality, made in Austria.



9

Troyer was founded in 1934 by Valentin Troyer under the name "Valentin Troyer – Elektromechanische Werkstätte", which was renamed to today's Troyer SpA in 2010. The name has changed, but the basic idea is the same: Quality and Flexibility! We always focus on the special needs and wishes of customers and as a competent partner we offer technical solutions in all areas (mechanical engineering, electrical engineering, automation) and we are also on site with our service team after commissioning. We create through best service, high technical level and craftsmanship exemplary solutions for hydroelectric power generation and local energy distribution. This mission requires innovative, strategic thinking and the application of the latest technologies. For three generations, we have been designing, building and operating high-quality water turbines and power plants that set new standards in terms of technology and functionality at all times.



10

Wild Metal Company, founded in 1997 by Wild Markus, started its activity in an extremely wide variety of metal working sectors. However, it was not long before Wild Metal began to focus on hydraulic steel construction and thanks to its extremely skilled team very soon became industry specialists. Ever since its foundation the company has been growing steadily. The relocation of the corporate offices to Mareta in 2001 and their further expansion in 2012 heralded yet greater expansion. In all its projects, Wild Metal offers the advantage of its outstanding network of partners. Thus, the knowledge of specialists is available to add to our own experience and know-how in all sectors. Wild Metal has always prided itself on being at the cutting edge of technology and is always anxious to improve; this is demonstrated not least by the patented Grizzly Coanda rack, which has won high acclaim from all sides.



11

Tiroler Rohre GmbH has more than 75 years of experience in the development, production and marketing of high-quality ductile iron systems for the water transport and deep foundations for structures. Due to the continual development and improvement of our products, we are an innovative manufacturer of ductile pipe and pile systems. At our production site in Hall in Tyrol, in the heart of Europe, 230 employees use their expertise and professionalism every day to produce high-quality products. In order to keep this extensive knowledge within the company, we train our employees ourselves, and we have won national awards for our training schemes. The sustainable properties of this material, combined with innovative product technologies and professional expertise in our customers' areas of application, make us the right partner for the water industry and deep-foundation engineering.



14

Ossberger for over 100 years, they have been helping transform the power of water into useful energy, by the most economically beneficial supply to any nation. Through this time more than 10,000 power stations have left our factory since then. Ossberger hydro stations are located on five continents, generating environmentally friendly electricity without CO₂ emissions up to this very moment. In the field of small hydropower, we are one of the global market and technology leaders. The original Ossberger Crossflow Turbine is premium solution. For more than 100 years it has represented best performance and reliability. Continuous innovations and development as well as CFD studies and FEM based calculations ensure that it conforms to the highest technological standards. It scores with flexibility when coping with highly varying flows, great robustness and a constantly high efficiency across a wide range of flows. To make sure that you get the most out of your hydropower station, Ossberger also offers robust solutions for automatic control and regulation, as well as for trash rack cleaning.



Visiting hydropower plants

1 Jochenstein HP

This run-of-river hydropower plant connects Austria with Bavaria and is a public border crossing point for cyclists and pedestrians. Its name originates in the rock. The Jochenstein is often referred to as the most beautiful run-of-river power plant of Austria by experts. The Jochenstein power station has an installed capacity of 132 MW and an average annual active capacity of 850 million kWh. All five machine units are Kaplan turbines with three-phase

synchronous generators. The turbines, supplied by Voith in 1952, have a diameter of 7.4 metres. The moving parts of the weir are near the Austrian shore, the power station with turbines in the middle of the river on the Jochenstein rock, while the ship lock and distributor are on the Bavarian side. The spring water level at normal water level is 290.0 m above sea level. The length of the reservoir is approximately 27 km, with a head of 9.78 m.



Source: iStock, Leamus

7 Obervellach II HP

After the Obervellach power plant, located in Austria, reached the end of its technical life, intensive construction and blasting work has been going on in the area for some time. At the same time, intensive work is being carried out on the concrete structures of the water intakes on Mallnitzbach, Dösenbach and Kaponigbach. The Obervellach II project will replace the existing facilities at the Obervellach and Mallnitz locations. The planned systems will increase production by more than 30%. The construction of this facility started in 2020 and the commissioning of the newly established power plant is planned for March 2024. The technical data of this hydropower plant are presented below:

- capacity – 37 MW,
- annual energy production – 125 GWh,
- flow rate – 9 m³/s,
- head – 488 m,
- storage capacity – 60,000 m³,
- volume of balancing pond 60,000 m³.

Constructing the new hydroelectric power plant Obervellach II offers many advantages for the environment. Despite the increase in the self-generation of traction current, the overall ecological situation will also be improved vastly. Minimum flow rates are achieved in line with state-of-the-

art technology. The lives of residents in the vicinity of existing power plants will be significantly improved by relocating the power plant to the existing industrial site thus reducing operational noise and vibrations. The new penstock laid underground, unlike in the past, will contribute significantly to the beautification of the townscape.

A legally valid UVP notification has been available since February 2016. In autumn 2018 the first preliminary measures and clearing were started. Further preliminary works, such as construction of the site installation areas, upgrading of the paths and roads for use by heavy vehicles, field documentation and necessary surveys were carried out in 2019/2020, so that the main construction works could begin in December 2020. The main construction works on the power plant site are divided into underground construction, structural engineering, building construction and earthworks.

The implementation of the new power plant Obervellach II is closely coordinated with neighbouring residents and municipal governments. During the construction phase general project information as well as current project status are shown at the infobox in Obervellach, which is accessible to the public.



Source: ÖBB-Infrastruktur AG



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 857851.

8 St. Anton HP

This hydropower station located in Talfer near Bolzano, northern Italy, was built between 1948 and 1951 with a head of 600 m and a maximum capacity of 72 MW. The original plant design was based on operating conditions that are completely different from those actually required. In order to prove the ability to be more flexible in power generation, a detailed study of the feedwater path and, in particular, the limitations of the equalization tanks were necessary to execute. As the main structural infrastructure cannot be changed or only in a limited way, only limited additional power generation was possible.

The St Anton hydropower station was renovated and modernised between 2016 and 2019 and is a model project for technical innovation and environmentally conscious, sustainable use of renewable energy sources throughout Europe. Probably for the first time, a large underground gallery with a volume of 95,000 m³ has been realised as an equalization reservoir to reduce the outflow of the River Talfer, which will significantly improve the quality of aquatic life and the safety of recreational use of the river basin. Maximum capacity totals 90 MW.



Source: Troyer

12&13 Sellrain SHP & Fotsch SHP

The construction of this Austrian hydropower station offers the opportunity to exploit the energy potential of the Melach and Fotscherbach, rivers in the Sellrain valley and the region. Consequently, it increases economic factors such as value creation, investment and jobs in the region support. The Sellrain hydropower plant exploits a catchment area on the Melach, and a catchment area on the Fotscherbach. It consists of water intakes, pipelines of

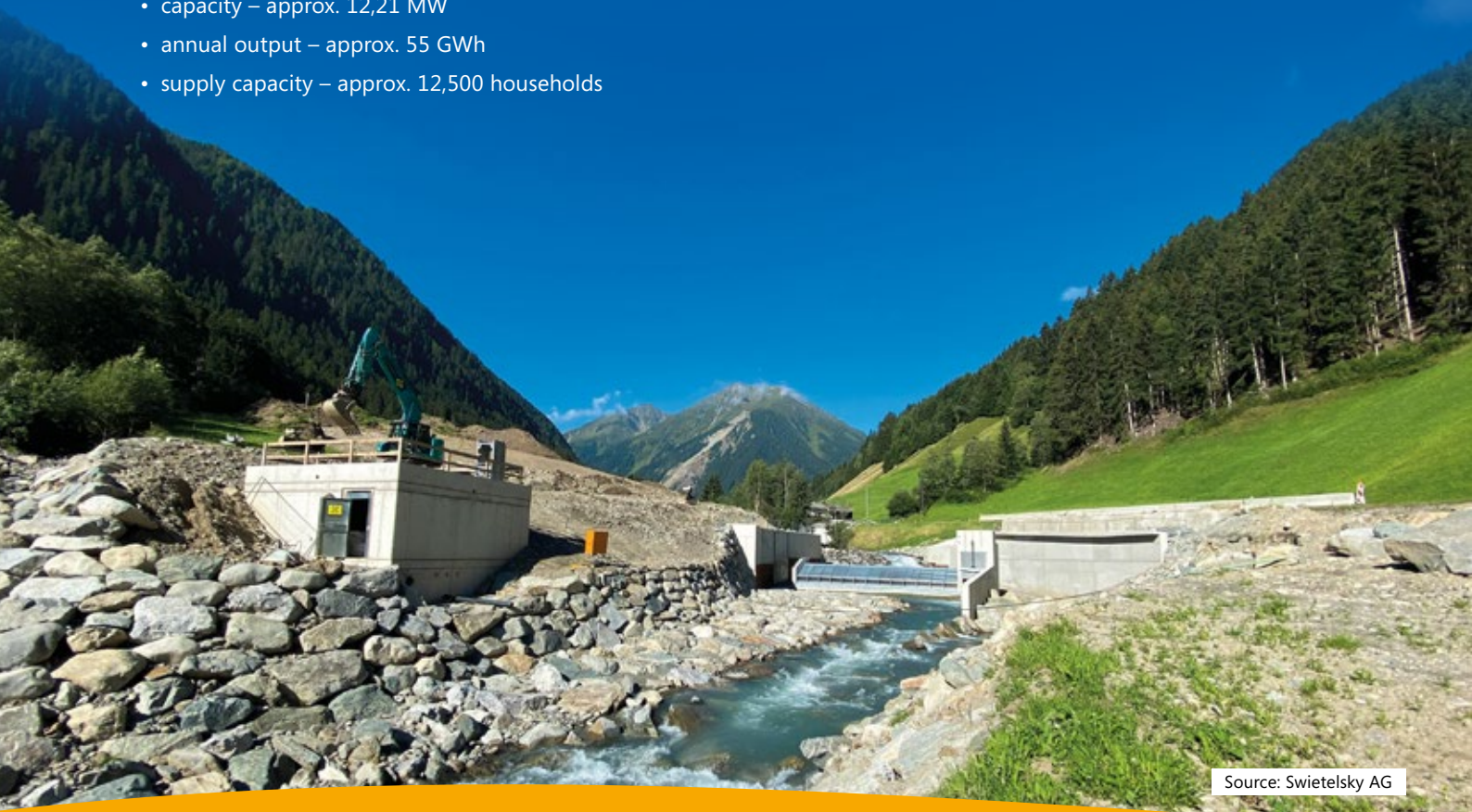
approximately 9.24 km (pipelines are designated DN1000, DN1200 and DN1300) and the power plant, which is located in a cavern just upstream the existing hydroelectric power plant on the upper Melach stage – Oberstufe. The construction of the power plant began in autumn 2021 and the cost of this investment is approximately €52.0 million net.

Sellrain SHP technical data:

- flow rate – 3.6 m³/s.
- pressure pipeline – approximately 9,235 metres long, divided by penstocks:
 - section A – WFA Fotscherbach to pipe connection: approx. 1,625 metres, material: cast iron; DN1000,
 - section B – WFA Melach to Luderercurve gallery: approx. 3,070 metres, material: cast iron; DN1200,
 - section C – Pipe union to power station/cave: approx. 1,000 metres, material: cast iron, DN1200,
- gross head – 416.83 m
- net head – 387.13 m
- turbine – 4-jet Pelton turbines (2 pcs.)
- weirs – Melach weir and Fotscherbach weir, each as bottom inlet – Tyrolean weir followed by a sand trap.
- capacity – approx. 12,21 MW
- annual output – approx. 55 GWh
- supply capacity – approx. 12,500 households

Fotsch SHP technical data:

- flow rate – 1 m³/s
- water way length – 2,237 m
- pipe: DN 800, cast iron
- net head (at Qa) – 236.21 m
- turbine: 5-jet Pelton, vertical axis
- capacity – 2.062 MW
- annual production – 8.9 GWh
- start of construction – September 2021
- start of operation – December 2022



Source: Swietelsky AG



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 857851.

15 Möhne SHP

The Möhne Reservoir used to be one of the largest reservoirs in Europe. It was put into operation in 1913, after merely five years of construction work. The Möhne Reservoir used to be the backbone of the Ruhr area's water supply and still accounts for 28% of total storage capacity, thus making an essential contribution to controlling the River Ruhr's runoff. It was engineered by the Regierungsbaumeister (state architect) Ernst Link. Franz Brantzky, a leading Rhenish architect of his time, won the competition for architectural design of the dam. Parts of the Möhne Reservoir's dam are today listed as a historic monument. The masonry dam with its slightly arched shape is made of quarry stones. It is 650 metres long, up to 40 metres high and can hold up to 134.5 m³ metres of water. In the dam's upstream area, i.e. where the rivers Möhne and Hevee join the reservoir, two upstream basins were constructed. Their water level is kept at a constant level independently of the main reservoir, thus reducing the inflow of sediment and nutrients to the main reservoir and improving the living conditions for flora and fauna in the inflow areas.

Since the original hydropower station was completely destroyed in 1943 by the bombing and subsequent

breach of the wall during the war, a replacement had to be built. The new main power station was built between 1950 and 1954 about 250 m downstream the dam on the left bank of the compensation pond. A maximum of 24 m³/s is supplied to two vertical axis Kaplan turbines, which can generate up to 12.9 GWh of electricity on an annual average with generator outputs of 3,500 kW each.

Due to the total washout of the areas below the wall, the balancing pond had to be redesigned. In the process, the basin was enlarged to 660,000 m³ and today reaches up to the wall so that the pond serves as a stilling basin in the event of a dam overflow and normally receives the water from the storage power plant. Its water level, at 183.65 m above sea level, is about 30 metres below the full reservoir level in the main dam. The newly built auxiliary power plant at the outlet has two machine sets, each with a capacity of 300 kW, which together can swallow a maximum of 12 m³/s and generate 1.9 GWh annually. In order to be able to discharge larger quantities of water from the balancing pond if necessary, a fish belly flap with a hydraulic cylinder on one side was installed in 1986.



Source: Wikimedia Commons, PaulT (Gunther Tschuch)

Places on the route

Munich

Munich is the capital of Bavaria. Many people usually associate it with the FC Bayern Munich football club, the world-famous Oktoberfest and the BMW brand. However, Munich is a modern city of culture and art with many historic buildings. It is a vibrant metropolis and filled with world-class museums. While you are here, it is worth seeing attractions presented below.

In the Old Town at the turn of the 20th century, the neo-Gothic Town Hall was built. Not every tourist is aware that it is possible to take a lift up the Town Hall tower and climb to the viewing terrace created at a height of more than 80 m. A bit away from the New Town Hall stands the inconspicuous building of the Old Town Hall, which today houses the city museum. By the side wall you will see a statue of Juliet donated by Verona (a partner city). It is worth walking a little south of the Old Town Hall to visit the Gothic St. Peter's Church, which has the status of the oldest church in Munich. Admission is free. Inside, look out for the magnificent Baroque altarpiece.

Also worth seeing is the Residence of the Wittelsbach dynasty, which was their main residence for four centuries

until 1918. It suffered during the war – the roofs and part of the walls were destroyed. The residence consists of three attractions:

- The residence museum, which includes the former flats and palace halls,
- Treasury – was established as early as 1565. The 10 halls display, among other things, crowns, royal memorabilia or porcelain and gold products,
- The Cuvillies Theatre – a beautiful theatre in the style of the German Rococo built between 1751 and 1755.

The Old Pinakothek and the New Pinakothek are further venues worth visiting. In the Old Pinakothek, we will see a huge collection of works and sketches by Peter Rubens, as well as works by other esteemed Old Masters such as Rembrandt and Albrecht Altdorfer. The New Pinakothek exhibits works by, among others: Vincent van Gogh (including one version of the famous Sunflowers), Claude Monet or Édouardo Manet.



Source: Wikimedia Commons, Richard Bartz



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Linz

Linz is a city in north-eastern Austria, located on the Danube. Its origins date back to ancient times. In the Middle Ages it was an important trade center of the region. At the beginning of the 13th century, the town became the property of members of the Austrian Babenberg dynasty. Currently, Linz is the third largest (after Vienna and Graz) center of Austria, which is the capital of the Upper Austria region. The city is inhabited by over 205,000 people.

First on the “must-visit” list is Old Town. It is located on the southern bank of the Danube and has retained its Baroque character to this day. Its heart lies in the large, elongated Hauptplatz (219 by 60 metres). The centrepiece is the Baroque Trinity Column built by Sebastian Stumpfegger in 1723. It was created in gratitude for the end of the war and to commemorate the victims of the plague that plagued the city. The square is decorated with numerous magnificent Baroque town houses, including the Old Town Hall. In addition to the city authorities, the Tourist Information Office and the Museum of Dentistry are located here. Near one of the corners of the square stands the impressive Baroque Old Cathedral. To the south of the square, the Landstrasse, closed to traffic, begins. It is the main pedestrian street that stretches for about 1.3 km around which are concentrated numerous fine city shops. Another interesting attraction of the city is the cable car to Pöstlingberg (539 meters above sea level). Its cars cover a distance of nearly 3 kilometers and a height difference of 255 meters in less than 16 minutes, which is recorded in the Guinness Book of Records. At the top of the mountain, the cable car passes through a fairy-tale cave.

Lovers of classical music will be delighted with the Mozart House – it is a 16th-century Renaissance building at Altstadtstraße 17, where the Austrian composer and keyboard virtuoso lived for some time. It was here that he composed the Linz Symphony and the Linz Sonata in just three days.

The Lentos Museum of Modern Art is housed in a modern building at Doktor-Ernst-Koref-Promenade 1 and presents mainly German and Austrian art from the 19th and 20th centuries. The museum’s collection includes about 1,500 paintings, sculptures and art objects, more than 10,000

sketches and drawings, and about 850 photographs. You can see the works of artists such as Caspar David Friedrich, Gustav Klimt, Egon Schiele, Johann Baptist Reiter, Karel Appel.

The Castle Museum – located within the walls of the castle at Schlossbergstraße 1, it presents extensive collections related to the history of the region from ancient times to the present century. Here you can see e.g. a rich collection of works of art, weapons (from different eras), numismatics and a large collection of old instruments.

Nordico City Museum – located in a historic building at Dametzstraße 23, it presents various types of memorabilia, objects and finds documenting the development of the region and the city of Linz.



Source: Wikimedia Commons, Radler59

Salzburg

Salzburg is a city with less than 150,000 inhabitants, whose main attractions are located in the Old Market Square and its vicinity. The city of Salzburg had its origins in the times of the Roman Empire, when an important center for the province of Noricum was built in its place. It is a city of bicycles and public transport. Located near the border with Germany in the Alps, on the Salzach River, at an altitude of 424 m above sea level. The city as an important tourist and winter sports center is one of the most visited towns in Austria. The old town of Salzburg with great historical value was inscribed in 1996 on the UNESCO World Heritage List. In this city we will find many interesting monuments that will delight every tourist. The preserved baroque atmosphere and tenement houses and promenades reflecting the previous centuries, charming restaurants and stylized shop windows give this place charm.

Residenzplatz is a huge market square and is decorated with a beautiful baroque fountain, which is one of the first attractions that awaits you on your tour. In the city center, it is worth stopping at the City Museum. Salzburg's old town is full of amazing buildings. There is a baroque chapel in the Franciscan church, which must be seen when visiting the city. The church was rebuilt many times, in accordance with the prevailing architectural styles and rules for sacral buildings.

Getreidegasse is one of the hallmarks of Salzburg. In the past, it was the most important commercial point crossing the old town, and today, maintaining medieval traditions, stylized shop signs hang above the street, including the

most famous brands. Walking around Getreidegasse, it is worth stopping for a moment at number 9, because it is said that Wolfgang Amadeus Mozart was born here and spent the years of his youth.

Hohensalzburg Fortress is the next unusual object on the map of the city. The construction of this fortress towering over the city dates back to the 11th century. It is recognized as the largest and best preserved medieval castle in Central Europe. Inside, you can visit thematic exhibitions, presenting: miniatures of cities, furniture, coins, weapons and much more.

On the east bank of the Salzach River is the Mirabell Palace, built in 1603 by prince-archbishop Wolf Dietrich for his beloved Salome Alt. Today, it serves as the backdrop for the most romantic weddings you could possibly imagine. You could start sightseeing by walking through the palace garden. The Mirabell Gardens were completely redesigned under archbishop Johann Ernst von Thun in 1690. The underlying geometrical form, which is typical for the Baroque period, is still clearly recognizable. The visual orientation towards the cathedral and fortress adds to the grandeur of the gardens – simultaneously incorporating them into the overall historical ensemble of the city.

Another point worth visiting is Cafe Tomaselli. Probably the first Salzburg coffee house was founded in 1703. It is the oldest existing cafe in Western Europe, owned by the Tomaselli family for generations.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 857851.

IV Obervellach

Obervellach lies in the middle of the Hohe Tauern National Park and is a perfect starting point for experiencing nature. Around the town, the mountains reveal mysterious gorges, such as the Groppensteinschlucht with its romantic landslide scenery and breathtaking waterfalls. Another highlight is the Motorikpark Mölltal, where around 30 stopping points offer you the chance to train your coordination, motor functions and mind all year round – and all free of charge too. The climatic spa in Obervellach is the only place where you can undergo the so-called Schroth treatment, or dry diet, which has been used for almost 200 years, making it one of the oldest medical treatments in Europe. It gently detoxifies the body by means of a healthy diet, massages and vapor wraps.



V Bolzano

Bolzano is a city and municipality in Italy whose history dates back to the Middle Ages. At that time it was a market town that changed its rulers several times. In 1809, Napoleon incorporated Bolzano into the Kingdom of Italy. It later became part of Austria, only to return to Italy again after the First World War. In 1969, Bolzano became an autonomous. One of the most popular sites in Bolzano is definitely the Archaeological Museum of South Tyrol. The facility centres around an ice man called Ötzi. It is a very well-preserved natural mummy from around 3300 BC. The archaeological museum has a wealth of artefacts, which include objects found with the body, as well as numerous models or reconstructions. Temporary exhibitions are held on the top, third floor of the building.

Bolzano is also famous for its charming and picturesque old town. Its landmark is Via dei Portici, a 300-metre-long street with arcades among which small shops are hidden. The colourful buildings there create an unusual Italian atmosphere, making it the perfect place for a stroll. There's a good chance you'll find a market there with local delicacies and produce. The town's main square is Piazza Walther. Its name comes from the poet Walther von der Vogelweide. It is the ideal place to start exploring the streets of the old town. The Gothic Cathedral of the Assumption in Bolzano is the city's most impressive symbol. The monumental building, the reconstruction of which began in the 13th century, impresses both outside and inside. The church tower was built in the 16th century.



VI Innsbruck

Innsbruck is located at the foot of the Alps, in the Inn Valley, at an altitude of 547 meters above sea level. The first mention of the city in 1187 describes it as a stopover near the Brenner Pass. In the following centuries Innsbruck developed extremely dynamically, and its golden age dates back to the 15th century, when Maximilian I of Habsburg moved his imperial court to the city. It is from this time that the magnificent Hofburg and Ambras castles, as well as many other monuments, come from. Winter sports are the real showcase of the city. Innsbruck hosted the Winter Olympics twice, hosted the World Ski Championships (1933), and co-hosted the Euro 2008. The third competition of the famous Four Hills Tournament takes place annually on the Bergisel hill.

Bergisel, the ski jump in Innsbruck is one of the major tourist attractions that the city can boast of. A downhill

run for ski jumpers was built in 1925 on one of the hills, but it was subsequently rebuilt twice, until 2002, when its architecture was completely changed. It reaches 47 meters in height, and the station located in the clouds can be reached by cable car or climbed up. For guests and residents, a special observation deck with a restaurant with a panoramic view of the entire Innsbruck was created.

One of the more recognizable Innsbruck's landmarks is Ambras Castle, renaissance jewel, built in the 16th century. Noteworthy is the historic courtyard surrounded by two castle wings. In addition, the façades are decorated with wall paintings, giving the entire building a relief look. Inside the castle, the collections of Innsbruck's dukes are housed, gathering personal items, weapons and portraits. The Hofburg Palace, also known as the Imperial Palace, is another grand building located in the historic center of Innsbruck. The palace was built in the 14th century, and its main task was to protect the Tyrolean region and create a safe place for the most important heads of state. Today, in the place of residence of Austrian rulers such as Maximilian I and rulers: Maria Theresa and Princess Sissi, there is a museum of art from around the world. Close to the Hofburg Palace are the Imperial Gardens, which used to be an outdoor area for the family living in the estate. Today, everyone can enter their area and admire the English park created in the 16th century, which still impresses with the richness of greenery and many species of flowers.

Near the center of Innsbruck is the historic Church of the Holy Sepulcher for Emperor Maximilian I. There is one building in the center of Innsbruck that you cannot miss when visiting the old town. The Golden Roof, which is the hallmark and symbol of Innsbruck, shimmers in the sun, and the panorama surrounded by the Alps looks exceptionally beautiful, regardless of the season. When visiting this part of the city, it is worth paying attention to the other buildings and tenement houses surrounding the market square, which in themselves are other tourist attractions of Innsbruck. Also noteworthy is the Triumph Arch, from which it is worth starting the tour of the old town. The architecture of Innsbruck's building is based on the use of stained glass windows, shutters and beautifully decorated facades that give a stylish chic to the streets of this city.



Source: Wikimedia Commons, Henry Kellner



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 857851.

VII Sonthofen

Sonthofen is a district town in southern Germany, in the Land Bavaria, in the district of Swabia, in the region Allgäu, seat of the district of Oberallgäu. It lies in Allgäu, about 25 km south of Kempten (Allgäu), on the Iller River. Sonthofen is widely known for its milk and cheese products and as a tourist destination. Findings show that the Sonthofen area was already inhabited from the Stone Age to the Roman Empire. In the 6th/7th century, Germanic Alamans settled in the area at the foot of the Kalvarienberg. On the top of the hill, one suspects an old Thing site (a gathering assembly in early Germanic society). Sonthofen was first mentioned in a document in 1145. It had held the market right with important proprietary rights since 1429. In 1803, when the Prince-Bishopric of Augsburg was mediatised, Sonthofen came to Bavaria. In 1804

Sonthof Castle becomes the seat of a Bavarian Landgericht (regional court) responsible for justice and administration. In 1963 the previous market town of Sonthofen is given the town charter. In 1972 Sonthofen becomes the county seat of the newly formed district of Oberallgäu. In World War II Sonthofen was bombed twice because Adolf Hitler had built the Ordensburg Sonthofen, where young boys were trained for service in Nazi Party organizations. The Ordensburg was not destroyed in the war. From 1946 to 1948 it was home to the United States Constabulary school, from May 1951 through February 1952, was used by the United States Air Force in Europe as a basic training center and from 1956–2009 the German Bundeswehr located its Military Police and Staff Service School there.



Source: Wikimedia Commons, Flodur63

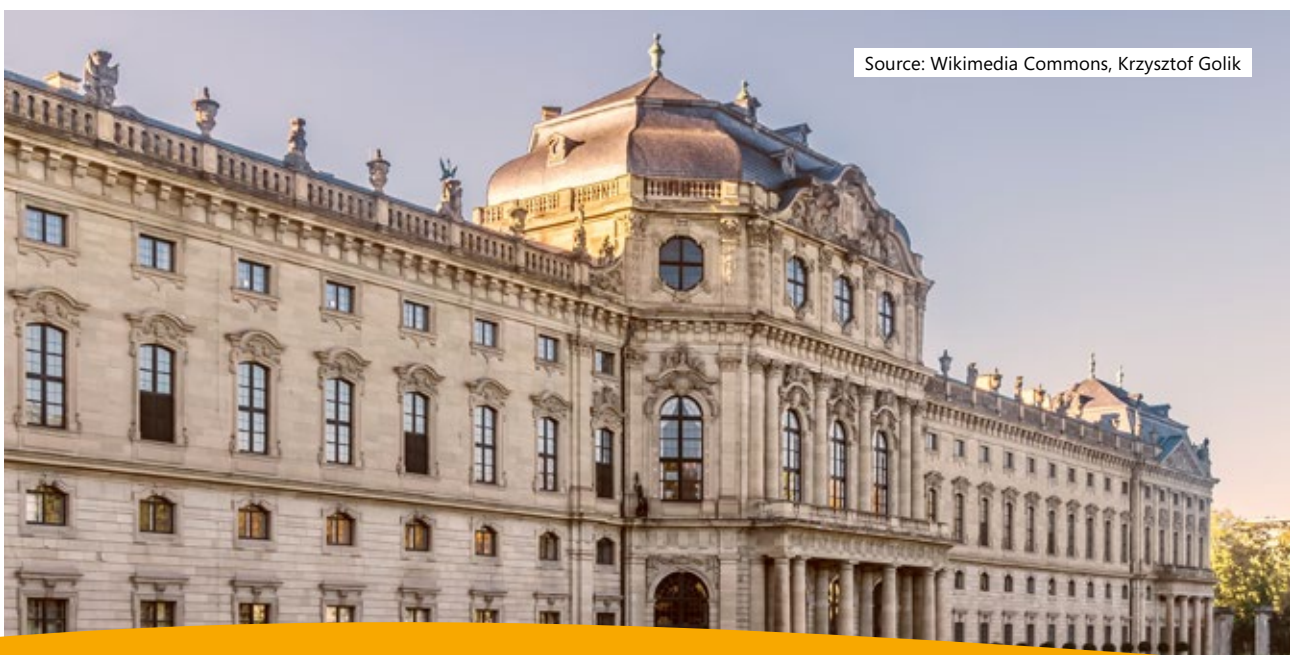
VIII Würzburg

Würzburg, located in north-western Bavaria, is one of the most interesting cities in the historic Franconian region. Despite the enormity of the war damage, the city has partially preserved its historical character and some of the artworks located here are unique on the continent. Among German tourists, the city is known as the first (or last) point of the Romantic Road (Romantische Straße), a tourist themed route established in the 1950s. The Romantic Road is made up of dozens of cities and towns, starting from Würzburg and ending in the Austrian border town of Füssen. The entire route is around 350 kilometres long. The city is situated on the River Main, and practically in its very centre you will find huge terraced vineyards stretching up the hill on the west side of the river. Here it is worth visiting the Baroque Bishop's Residence, where the ruling Prince Bishop lived. This 18th-century complex is considered to be one of the most magnificent Baroque palaces in Europe, and is compared with the works of the greatest architects of the period. In 1981, it was inscribed on the UNESCO World Heritage List.

The origins of Würzburg are linked to the area to the east of the Main. It was on the Marienberg hill that the first buildings were built as early as prehistoric times. It is certain that in the 8th century there was a small fortified Frankish fortress on the hill, inside which one of the first German Christian churches was built. Around the 12th century, the existing structure was replaced by a walled castle, which was actively expanded over the following

centuries. It towers more than 100 metres above the level of the river and has saved the city's ruling bishops on more than one occasion. The palace rooms are resplendent with ornamentation and accessories, with the ceiling frescoes by Venetian artist Giovanni Battista Tiepolo leading the way. The residence is located at the south-eastern border of the historic old town, just in front of the former line of Baroque fortifications and bastions.

Until the end of the 19th century, the old town was still surrounded by a complex of high baroque fortifications and bastions, which were built after the end of the Thirty Years' War. One of the first places to head to when starting a tour of Würzburg's old town is the market square. This relatively large square is surrounded by magnificent building facades, the Maria Chapel and one of the city's most beautiful buildings, the House of the Hawk, which today houses a tourist information centre. In the middle of the square is a fountain in the form of a 15-metre high obelisk by Johann Andreas Gärtner from 1805. The sides of the structure are decorated with figures representing the four seasons. The symbol of the city that catches every tourist's eye is the Old University. It was built at the end of the 16th century. In front of it, a historic cobbled road stretches and the complex itself is distinguished by the tall tower of the former Renaissance Neubaukirche. Today, the building no longer serves a church function and is used as a representative hall.



Source: Wikimedia Commons, Krzysztof Golik



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IX X Delft

Delft is an incredibly charming town located between The Hague and Rotterdam, which is one of the greatest pearls of the Netherlands. Beautiful canals, streets that look like they were centuries ago, shops, cafés and restaurants – this is what makes this place so special. The historic part of the city is located in a small area, so Delft can only be explored on foot. Another advantage for tourists is that the train station is only about 700 m from the market square, so you are in the heart of the city in less than 10 minutes. The key point of the city is the market square. Two of the city's most important buildings stand on the square – the town hall and the New Church. The Renaissance Town Hall of Delft is the work of one of the most important Dutch architects of the period, Hendrick de Keyser, who built it on the basis of a burnt-down medieval building.

There are many shops and cafés in the market square. Particularly recommended are the shops of Henri Willig Kaas Delft, where you can try many different types of cheese and buy pieces of this local delicacy. The New Church, which stands at the market square, is famous for its baroque mausoleum of William of Orange. The interior of the church impresses with its monumentality, which was appreciated by many Dutch painters who chose it as the

theme of their works, and if you want to see the square in all its splendour, it is worth climbing the almost 109 m high tower of the New Church. Speaking of the observation tower, one cannot omit the Old Church's crooked tower, which is the Dutch equivalent of the tower of Pisa. The reason for the structure's sagging was trivial – it was erected on a buried canal and the ground began to fall quite quickly. Luckily, the structure was stabilised, but there was a long thought about its demolition. The interior of the Old Church is also eye-catching, especially the stained glass windows created in the 20th century. Among the church's finest monuments is the tomb of Admiral Maarten Tromp, a hero of the Anglo-Dutch War.

The famous faience wares of Delft, or beautiful ceramics, are a hallmark of the Netherlands. Their distinctive feature is their picturesque blue colour. Their production was the backbone of the city's economy, and today you can buy a distinctive product in virtually every souvenir shop. Faience in Delft was produced in the 17th-century royal factory, which is still in operation today and we can visit it. The Royal Porcelain Museum is located a little further away from the historic centre.



Source: Wikimedia Commons, W. Bulach

Ettal – Linderhof Palace

Linderhof Palace and its surrounding park is one of the most artistic and stylistically complex ensembles of the 19th century. The “Royal Villa” is the only palace King Ludwig II of Bavaria (1845–1886) was able to complete (1878). It is influenced by French architecture and modelled on the small summer palaces, usually set in parkland, that were built in France in the 18th century and were also often to be found in Germany in the parks of larger palaces. Behind the Baroque façade is a Rococo world with motifs from the age of Louis XV of France. Ludwig’s creation in the Second Rococo or Neo-Rococo style, however, shows a strong South German influence: Ludwig took over a great deal from the Rococo legacy of his own ancestors with which he was familiar from his childhood, such as the Amalienburg in Nymphenburg and the Ornate Rooms of the Munich Residence. The rich and abundant ornamentation, with its many sculptural elements, is thus not merely an attempt at imitation. In Linderhof Palace Ludwig II created rooms of such sumptuousness that they far surpass everything that inspired them, as well as showing workmanship of an incomparable artistic quality.

The Linderhof Palace park is among the most outstanding of its era. It combines elements of the French Baroque garden and the English landscape garden. The terraces on the central and horizontal axes of the palace with their water basins and geometric flower beds, the long cascade with its elaborate fountains and the two focal points, the pavilion and the Venus Temple, are Baroque motifs. The natural, irregular design of the surrounding park with the exotic buildings is based on English models. The Moroccan House and Moorish Kiosk are examples of the Oriental trend that was also cultivated by Ludwig II. The three “stage sets” in the park, Hunding’s Hut, the Hermitage of Gurnemanz and the Venus Grotto, stem from Ludwig’s enthusiasm for the operas of Richard Wagner. The mountain backdrop is incorporated into this brilliant synthesis of the arts by means of visual axes and kilometres of paths which lead far up into the mountain forest.



Source: Wikimedia Commons, Suicasmo



This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 857851.

HYPOSO Study Tour in detail

Study Tour package includes and covers the costs of:

- single rooms, BB,
- lunches and dinners at local restaurants/hotels (water, coffee/tea), lunch boxes, bottled water,
- business meetings at the selected companies,
- visits to hydropower plants (Jochenstein, St. Anton, Sellrain, Fotsch, Obervellach II and Möhne Dam),
- participation in the HYPOSO Final Event at IHE Delft,
- travel by bus.

Practical information

- The Study Tour begins on 3 May 2023 at Leonardo Hotel Munich City Olympiapark, where organisers will be waiting for participants' arrival.
- All participants are bound by the official the Study Tour schedule.
- Due to a busy schedule, please be punctual.
- Please follow the dress code:
 - the Study Tour – comfortable hiking clothes, including trekking boots. Warm clothes are recommended due to variable weather conditions in mountain area and visits to underground caverns of hydropower plants.
 - the HYPOSO Final Event – smart casual.
- Please, take a few face masks with you – it may be necessary to use a mask in some situations.
- Participants are responsible for their luggage.
- The applicable currency in the countries visited is Euro.
- Payment cards that belong to the international Visa or Mastercard systems are honoured in visited countries.
- Ongoing communication during the HYPOSO Study Tour will be carried out via dedicated group on WhatsApp
- Study Tour concludes on 13 May 2023 after breakfast.

Study Tour accomodation – hotel addresses

- Leonardo hotel Munich City Olympiapark
Dachauer Str. 199, 80637 Munchen, Germany
phone: +49 89 1592570
- Ibis Styles Linz
Wankmüllerhofstraße 37, 4020 Linz, Austria
phone: +43 732 347281
- Hotel Friesacher
Hellbrunnerstrasse 17, 5081 Anif, Austria
phone: +43 6246 8977
- Erlebnishotel Kärnten Mölltal
Untergratschach 11, 9821 Untergratschach, Austria
phone: +43 4782 32166
- Hotel Steiner
Kennedy Street 32/34, 39055 Laives, Italy
phone: +39 0471 954225
- Rufi's Hotel Innsbruck
Fischnalerstraße 28, 6020 Innsbruck, Austria
phone: +43 512 275730
- AllgäuSternHotel
Buchfinkenweg 2, 87527 Sonthofen, Germany
phone: +49 8321 2790
- Hotel Melchior Park
Am Galgenberg 49, 97074 Würzburg, Germany
phone: +49 931 3590400
- Holiday Inn the Hague Voorburg, an IHG Hotel
Stationsplein 8, 2275 AZ Voorburg, Netherlands
phone: +31 70 209 9900

Contact details

Organizers:

Ewa Malicka – ewa.malicka@trmew.pl
Dominika Wójtowicz – dominika.wojtowicz@trmew.pl
Michał Lis – michal.lis@trmew.pl
TRMEW Sp. z o.o.

Bernhard Pelikan – bernhard.pelikan@boku.ac.at
FROSIO NEXT S.r.l.

Ingo Ball – ingo.ball@wip-munich.de
WIP Renewable Energies

Miroslav Marenc – m.marenc@un-ihe.org
IHE Delft Institute for Water Education

Local partners:

Bolivia – Andres Gonzales – andresgonzales.a@fcyt.umss.edu.bo
Universidad Mayor De San Simon (UMSS)

Cameroon – Joseph Kenfack – joskenfack@yahoo.fr
La Societe Solarhydrowatt Sarl (SHW)

Colombia – Carlos Velasquez – car.vel@bluewin.ch
Centro Latinoamericano Para La Pequena Hidroelectrica (CELAPEH)

Ecuador – Patricia Haro, María José Guerra Amán – maria.guerra@epn.edu.ec
Escuela Politecnica Nacional (EPN)

Uganda – Dan Marlone Nabutsabi – dmarlone@yahoo.com
Hydropower Association Of Uganda Limited (HPAU)

Detailed itinerary

Wed 03.05.2023

(whole day) arrival at the hotel in Munich,
check in from 14.00

13:00 – 13:30 transfer: hotel – local restaurant

13:30 – 15:00 lunch at the local restaurant

15:00 – 17:00 short city walking tour with
a local English-speaking guide

17:15 – 17:45 transfer to the hotel

19:00 welcome dinner at the hotel restaurant

Overnight in Munich

Thur 04.05.2023

6:30 – 9:00 transfer: hotel in Munich – Danube
Jochenstein HP

9:00 – 9:30 short stop at Danube Jochenstein HP

9:30 – 10:00 transfer: Danube Jochenstein HP – Global
Hydro company

10:00 – 12:00 business meeting at Global Hydro
company

12:30 – 14:00 lunch at the local restaurant

14:00 – 16:00 transfer: local restaurant – Voith Hydro
GmbH & Co KG Division Small Hydro VHGE

16:00 – 18:00 business meeting at Voith Hydro company

18:30 – 20:00 dinner with Voith representatives

20:00 – 21:15 transfer to the hotel in Linz, check in

Overnight in Linz

Fri 05.05.2023

7:00 – 7:30 transfer: hotel in Linz – Gugler company

7:30 – 9:00 business meeting at Gugler company

9:15 – 10:00 transfer Gugler company – Andritz
company

10:00 – 12:00 business meeting at Andritz company

12:30 – 14:00 lunch in Andritz's canteen

14:00 – 15:00 transfer: Andritz's canteen – Braun
Maschinenfabrik

15:00 – 17:00 business meeting at Braun
Maschinenfabrik

17:00 – 18:00 transfer directly to a meeting point in
Salzburg for a walking tour

18:30 – 20:00 short city walking tour with two local
English-speaking guides

20:00 – 21:30 dinner at the local restaurant

22:00 – 22:15 transfer to the hotel in Anif, check in

Overnight in Anif

Sat 06.05.2023

8:00 – 10:00 transfer: hotel in Anif – Obervellach II HP

10:00 – 12:00 visit at Obervellach II HP

12:15 – 14:00 lunch at the local restaurant

14:15 – 18:00 continuation of visit Obervellach II HP

18:15 – 18:30 transfer to hotel in Untergratschach, check in

19:00 dinner at the hotel restaurant

Overnight in Untergratschach

Sun 07.05.2023

8:30 – 12:00 transfer: Untergratschach – lunch
close to St. Anton HP

12:00 – 13:15 lunch at the local restaurant

13:15 – 13:30 transfer: local restaurant – St. Anton HP

13:30 – 17:00 visit at St. Anton HP

17:00 – 17:30 transfer directly to meeting point in Bolzano
for a walking tour

17:30 – 19:00 short city walking tour with a local
English-speaking guide

19:00 – 20:30 dinner at the local restaurant

20:30 – 21:00 transfer to the hotel in Laives, check in

Overnight in Laives



Mon 08.05.2023

- 7:45 – 9:00** transfer: Laives – Sterzing
- 9:00 – 12:00** business meeting at Troyer company
- 12:15 – 13:45** lunch in Sterzing
- 13:45 – 14:00** transfer: local restaurant – Wild Metal company
- 14:00 – 17:00** business meeting at Wild Metal company
- 17:00 – 18:00** transfer: Wild Metal company – hotel in Innsbruck, check in
- 18:30** dinner at the hotel restaurant
After dinner sightseeing on your own
Overnight in Innsbruck

Tues 09.05.2023

- 7:30 – 8:00** transfer: hotel in Innsbruck – TRM Tiroler company
- 8:00 – 10:00** business meeting at TRM Tiroler company
- 10:00 – 10:30** transfer: TRM Tiroler company – Sellrain SHP
- 10:30 – 13:00** visit at Sellrain SHP
- 13:30 – 14:45** lunch at local restaurant
- 15:00 – 16:00** continuation of the visit of Sellrain SHP
- 16:00 – 17:00** visit at the powerhouse of Fotsch SHP
- 17:30 – 20:00** transfer to the hotel in Sonthofen, check in
- 20:30** dinner at the hotel restaurant
Overnight in Sonthofen

Wed 10.05.2023

- 7:30 – 9:00** transfer: hotel in Sonthofen – Ettal (Linderhof Palace)
- 9:30 – 10:00** visit Linderhof Palace
- 10:00 – 11:00** free time

- 11:00 – 13:30** transfer: Ettal – lunch close to Ossberger company
- 13:30 – 15:00** lunch at the local restaurant
- 15:00 – 17:30** business meeting at Ossberger company
- 17:30 – 19:30** transfer to the hotel in Würzburg, check in
- 20:00** dinner at the hotel restaurant

Overnight in Würzburg

Thur 11.05.2023

- 8:00 – 12:00** transfer: hotel in Würzburg – Möhne Lake
- 12:00 – 13:30** lunch at the local restaurant
- 13:30 – 15:30** Möhne SHP tour with a local German-speaking guide with translation into English
- 16:00 – 19:30** transfer to the hotel in Voorburg, check in
- 20:00** dinner at the hotel restaurant

Overnight in Voorburg

Fri 12.05.2023

- 8:30 – 8:45** transfer: hotel in Voorburg – HYPOSO Final Event
- 9:00 – 18:30** HYPOSO Final Event at IHE Delft Institute for Water Education
- 19:00 – 21:30** dinner at the local restaurant
- 22:00 – 22:15** transfer to the hotel in Voorburg

Overnight in Voorburg

Sat 13.05.2023

- 7:30 – 10:30** breakfast
check out till 12.00



Photo credits: iStock, Hotel Melchior Park



Fri 12.05.2023

HYPOSO Final Event – timetable

Mini exhibition and B2B talks

- 08:00 – 09:00** Reception & Welcome coffee
- 09:00 – 12:00** B2B talks & matchmaking (on demand)
- 09:00 – 14:00** Mini exhibition of European hydro companies
- 10:00 – 12:00** HYPOSO Advisory Board Meeting (internal event)
- 12:15 – 13:45** Lunch break (at IHE cafeteria)

Final conference

- 14:00 – 14:25** Welcome and introduction
Eddy Moors, Director IHE Delft, Netherlands

About the HYPOSO Project
Ingo Ball, WIP, Germany
- 14:25 – 14:45** Key note speech
- 14:45 – 15:00** European efforts to support the hydropower sector
Dirk Hendricks, EREF, Belgium
- 15:00 – 15:20** The HYPOSO Map – a useful tool for academia and the industry
Petras Punys, VDU, Lithuania
- 15:20 – 15:40** Capacity building – working today on the experts for tomorrow
Miroslav Marenc, IHE Delft, Netherlands
- 15:40 – 16:00** 15 potential hydropower sites in five countries – possibilities for corporations
Bernhard Pelikan, Frosio Next, Italy
- 16:00 – 16:20** Framework conditions for small hydropower – experiences from three continents
Ewa Malicka, TRMEW, Poland
- 17:15 – 17:45** Panel discussion: The role of (small) hydropower in a changing energy system
Moderation: *Dirk Hendricks, EREF, Belgium*
- 17:45** Conclusions & key messages
Ingo Ball, WIP, Germany
- 18:00** End of event
Farewell coffee
- 19:00** Gala Dinner in Delft (please register)

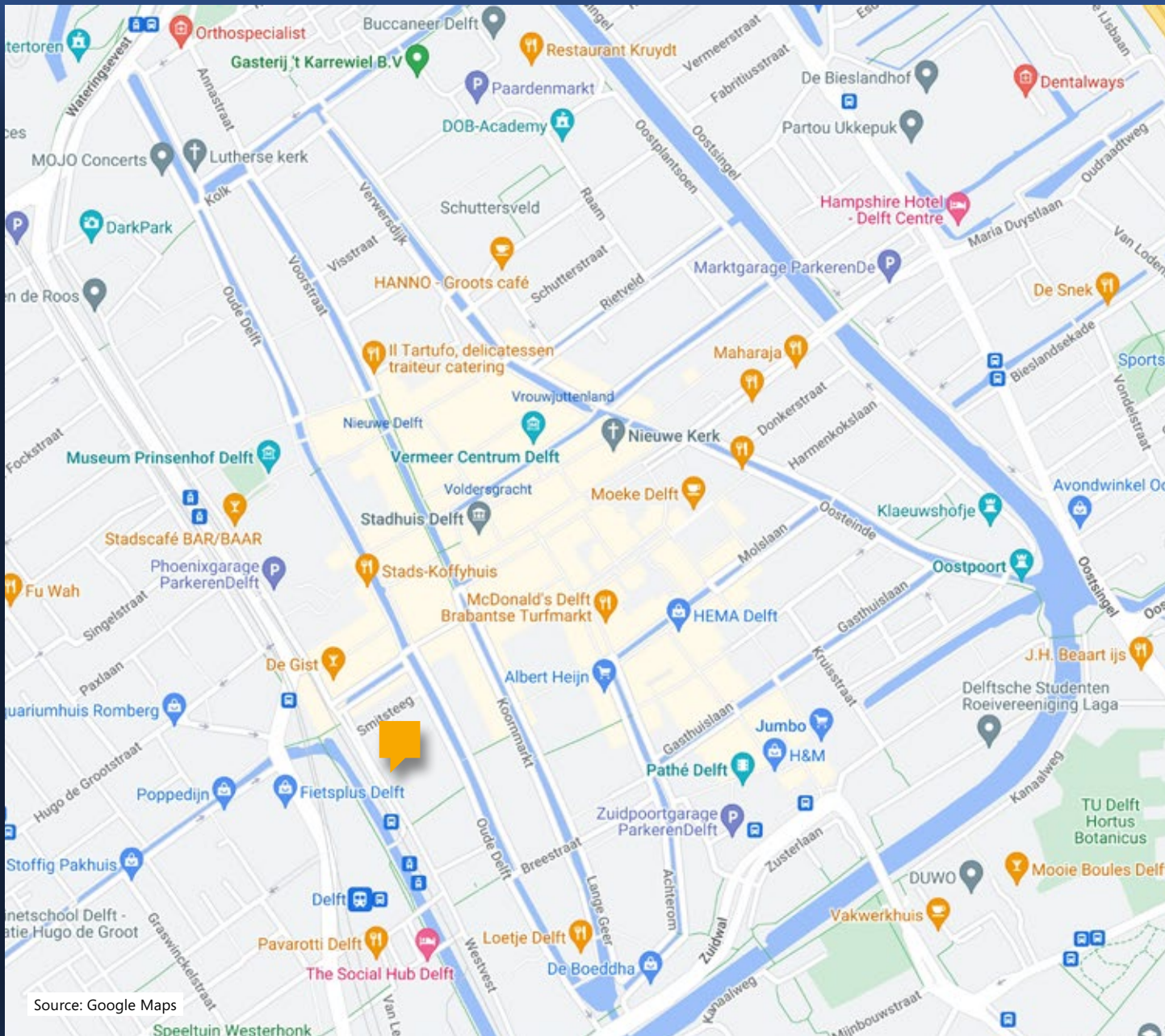


Source: Wikimedia Commons, Rachelledwarka



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 857851.

City plan of Delft



Source: Google Maps

 IHE Delft Institute for Water Education



Source: iStock, JaySi



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Guidebook

**HYPOSO
BUSINESS
STUDY TOUR
3–13 May 2023**

www.hyposo.eu