ROBOTSYSTEM, s.r.o.

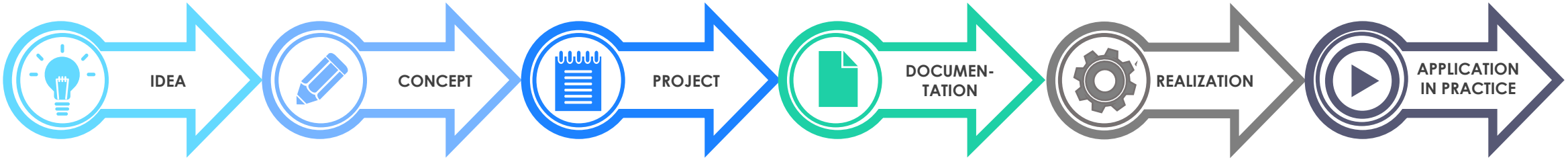
21. 4. 2020

ROBOTSYSTEM

ABOUT US

RESEARCH AND REALIZATION COMPANY

Focusing on breakthrough project solutions in the field of service robotics and logistics, and especially Industry 4.0 in Czech conditions, as well as unassisted robotic technology in the area of nuclear energetics with world novelty, omnidirectional robotic platforms for transport, as well as manipulation of components and technological units in high weight categories, robotic rescue and emergency technologies, energy resources based on renewable energy sources, and project and implementation goals in the area of Smart Cities.



FLEXIBILITY, VERSATILITY AND CREATIVITY

TEAM OF TOP RESEARCHERS, DESIGNERS AND IMPLEMENTERS OF PROTOTYPES

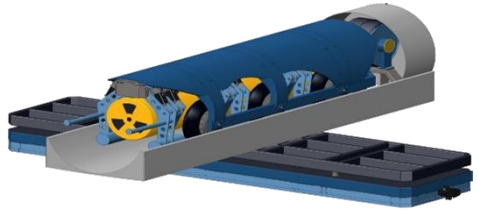
ADVANCED SOFTWARES

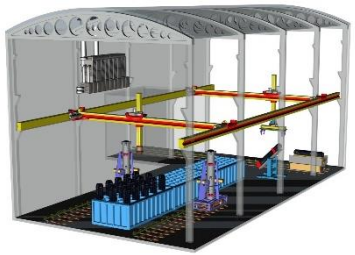
OWN PATENT DEPARTMENT

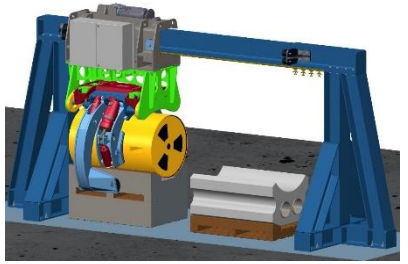
AREAS OF RESEARCH AND DEVELOPMENT

Medical transport and rehabilitation technologies

Robotics in nuclear energetics

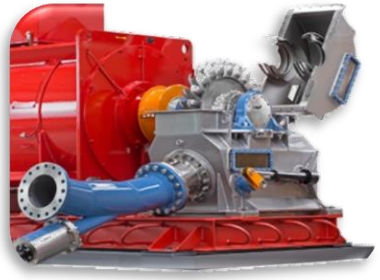






Rescue and emergency technologies

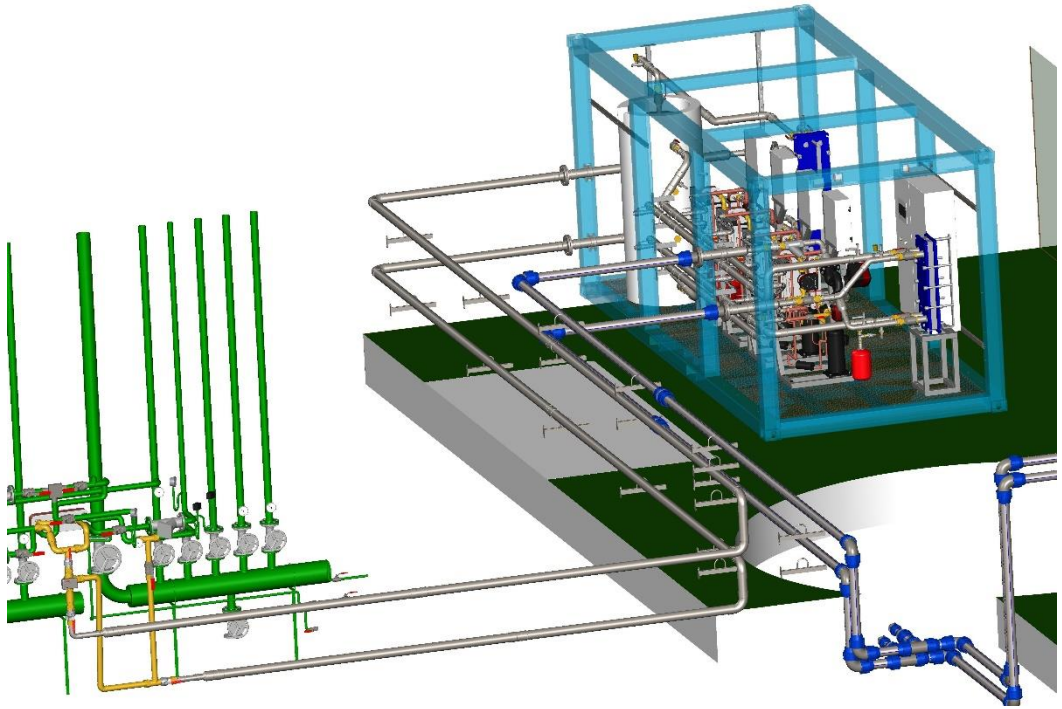
Renewable energy sources and energy storage



GEOTHERMAL LARGE-SCALE TECHNOLOGICAL SYSTEM

RESEARCH AND DEVELOPMENT OF A GEOTHERMAL LARGE-SCALE TECHNOLOGICAL SYSTEM FOR EXTRACTING GEOTHERMAL ENERGY FROM PUMPED MINE WATER (E.G. IN THE OSTRAVA-KARVINÁ DISTRICT)

Research and development of a large-scale technological system for the use of geothermal energy of pumped mine water, including the design of a large-scale heat exchanger for inclusion in the pipeline, with the possibility of changing output parameters according to the source's potential.



TECHNICAL PARAMETERS		
External dimensions (W; H; L)	2438 x 2573 x 6058	[mm]
Voltage net	3/N/PE AC 400/230 V 50 Hz / TN-S	
Container structure weight	4500	[kg]
Heating power	100	kW
Heat pump block output	25	kW
Heat pump coolant	R 410 A	3 kg
Performance factor (COP)	5,2 (W26/W60)	

GEOTHERMAL LARGE-SCALE TECHNOLOGICAL SYSTEM

Testing of technology parameters at the installation site

- Putting into operation and verification of complex system function
- Verification of material system stability in relation to mine water aggressiveness
- System operation started 9/2017
- SCOP efficiency coefficient 5.2
- Delivered thermal energy for the period 9/2017 - 9/2019 - **98 645 kWh**

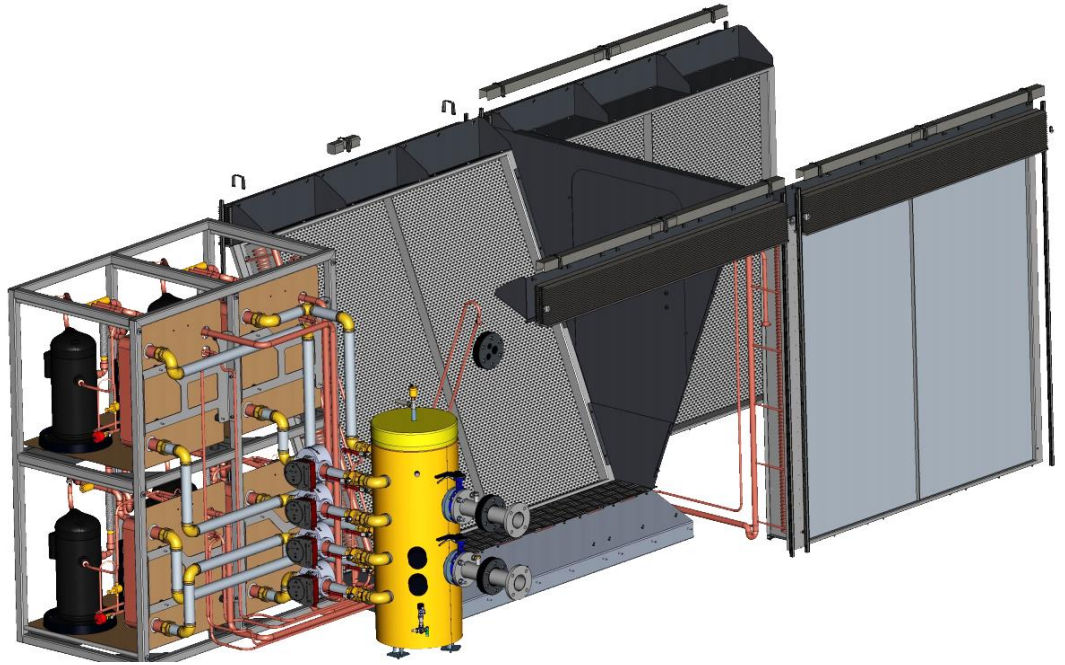
Testing of technology parameters in the hall

- Verification of lamellar heat exchanger yield parameters
- Verification of stability of material solution of lamellar heat exchanger
- Verification of function and parameters of heat pump technology
- Verification of the function of the control system, risk states solutions and system security
- Determination of heat pump technology parameters

MODULE SYSTEM OF AIR/WATER HEAT PUMPS

MULTIFUNCTIONAL MOBILE MODULE MONOBLOCK OF A COMPLEX AIR / WATER HEAT PUMP SYSTEM

Research and realization of a multifunctional system of individual heat pump blocks situated in the inner part of the structure, which can alternatively be supplied with a low potential heat source from geothermal energy sources or through a system of own evaporators implemented into the outer shell of the skeleton.



TOTAL PERFORMANCE PARAMETERS OF THE CONTAINER SYSTEM						
	°C	A7/W35	A2/W35	A7/W60	A2/W60	A-12/W60
Heating power	kW	219,2	164,4	184,3	160,4	134,8
Input power	kW	50	48,4	65,8	69,7	66,4
Performance factor**	-	4,4	3,4	2,8	2,3	2
Operating current	A	93,2	91,6	104	110	114
** including energy for defrosting, fan input power and circulation pump						

MODULE SYSTEM OF AIR/WATER HEAT PUMPS

ADVANTAGES OF THE DEVICE

- Complex technology of mobile container monoblock combining a system of individual air/water heat pump blocks with their technological accessories with the possibility of heat/cold supply.
- Modular power technology in categories 50-100-150-200 kW.
- Outdoor location, outside the building, with operative connection to the heating system.
- Flexible transport of the system by commercially available means.
- Load-bearing base with automated roof structure suitable for applications in areas with high snowfall frequency.
- Optional system for automated evaporator block shielding.
- Control system - local and remote technology management.
- The system of integrated evaporator blocks can be supplied with a low potential source of ambient heat or industrial exhaust air.

POSSIBLE USE

Use in planned events with short-term installation

- reconstruction and revitalization of buildings and halls,
- expeditions, cultural and other gatherings situated in temporary roofing,
- heating / cooling and hot water in the accommodation / office facilities at centralized workplaces of any construction,
- as part of humanitarian camps.

Conventional use wherever emphasis is placed on environmentally friendly heating / cooling without polluting the ambient air, in residential and office facilities, manufacturing plants and modern construction.

SYSTEM OF HYBRID AIR/WATER-WATER HEAT PUMPS

MOBILE MODULE MONOBLOCK OF A COMPLEX SYSTÉM OF AIR/WATER-WATER HEAT PUMPS

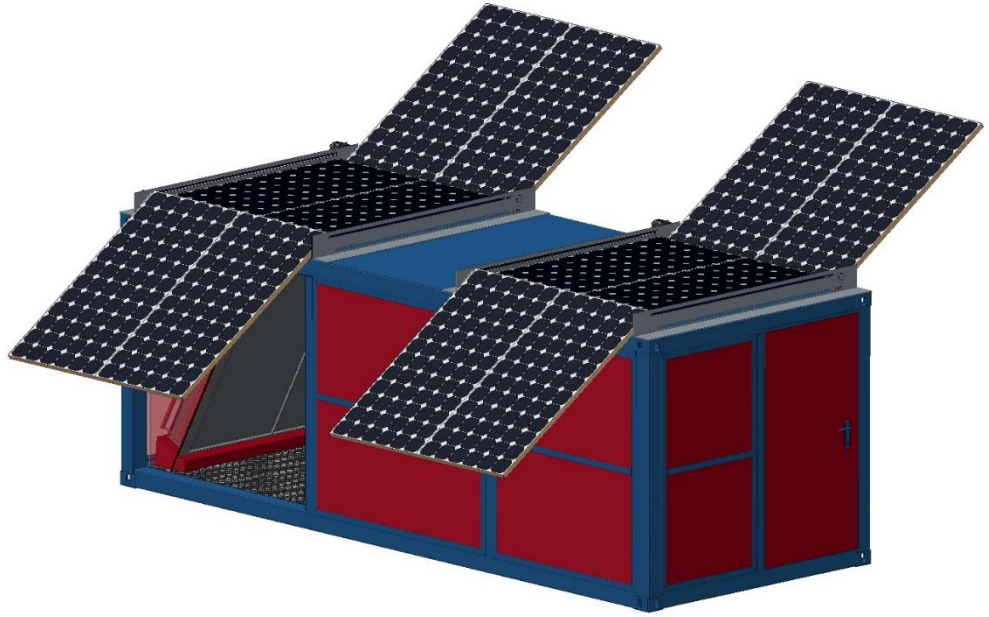
Research and realization of prototype of a multifunctional mobile autonomous hybrid energy container of air/water-water with progressive autonomous energy management

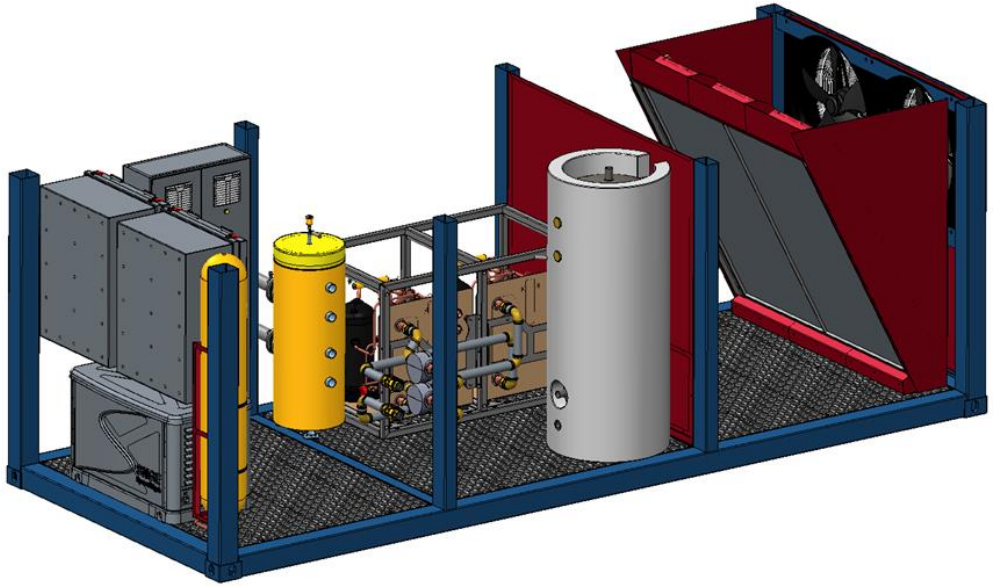
Modular power technology in categories 25-50-75-100 kW

Outdoor location, outside the building, with operative connection to the heating system

Flexible transport of the system by commercially available means

Control system - local and remote technology management

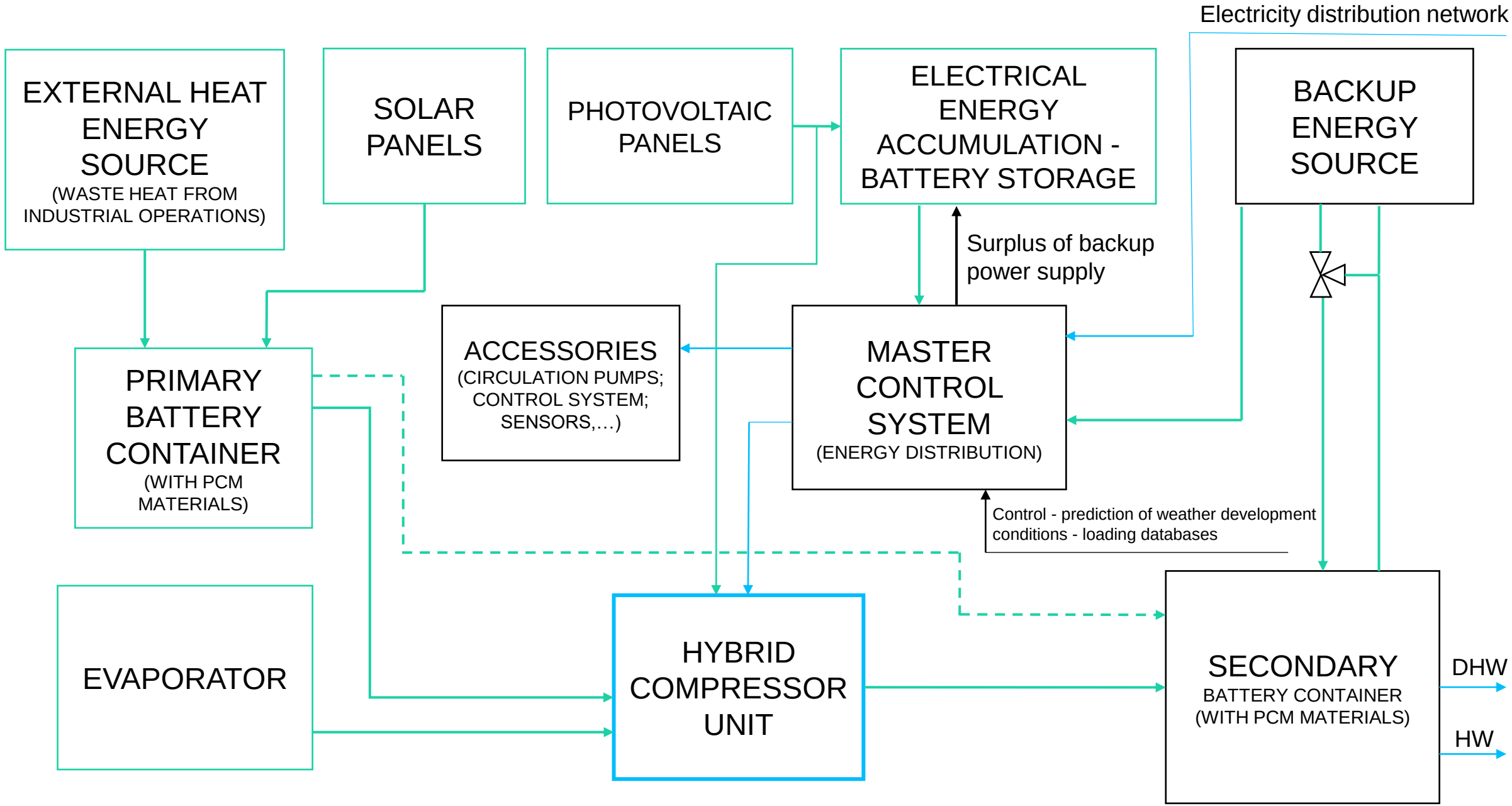




ADVANTAGES OF THE SYSTEM

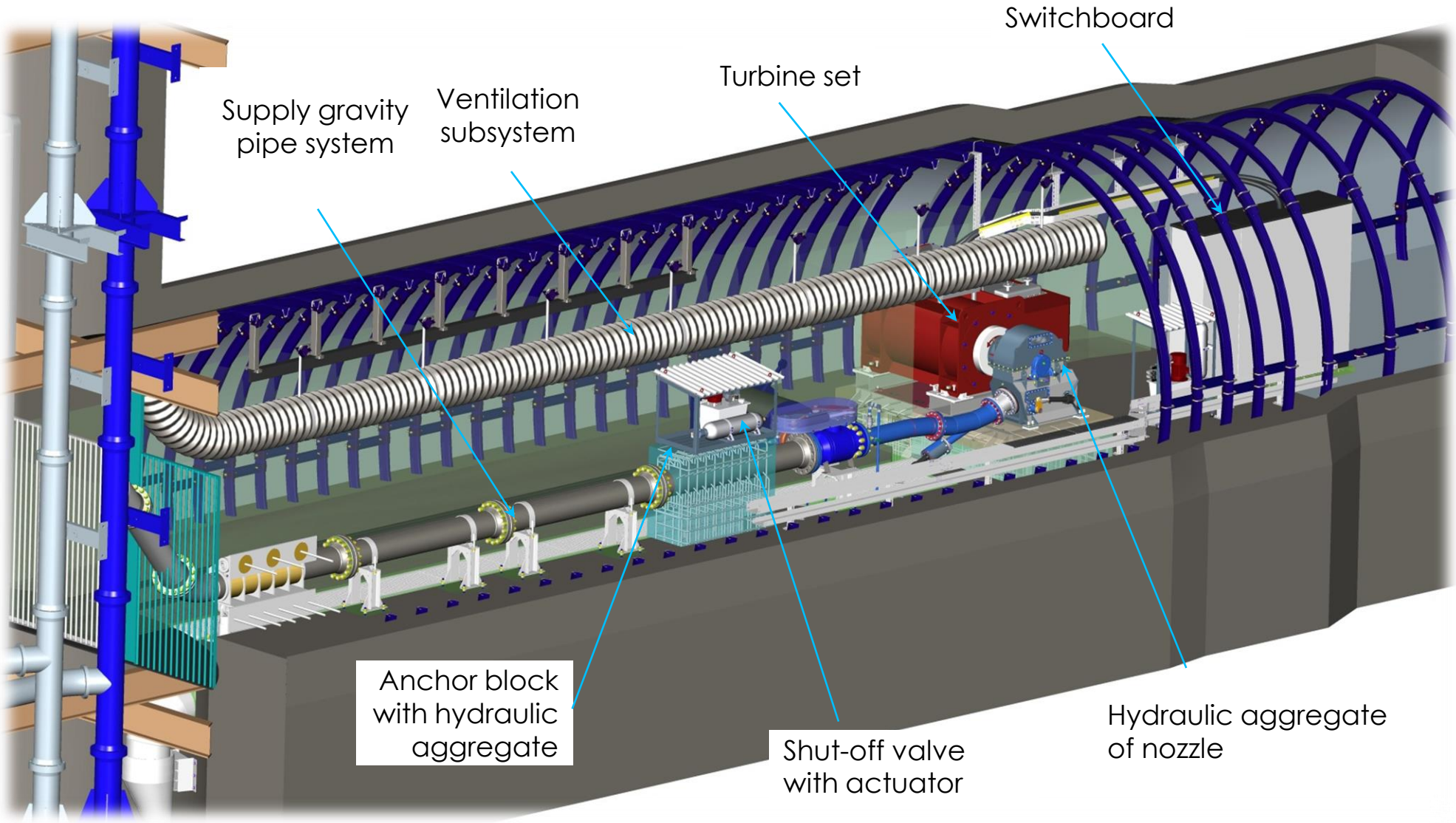
- Mobile hybrid energy container air / water - water heat pumps
- Autonomous energy management with implemented prediction of climatic conditions development
- Modular solution with the possibility of installing photovoltaic and photothermic subsystems
- Utilization of primary PCM accumulation, shifting the potential efficiency beyond efficient natural resource intervals with the effect of saving electrical work
- Heat and cold production
- Full function in insular mode

SYSTEM OF HYBRID AIR/WATER-WATER HEAT PUMPS



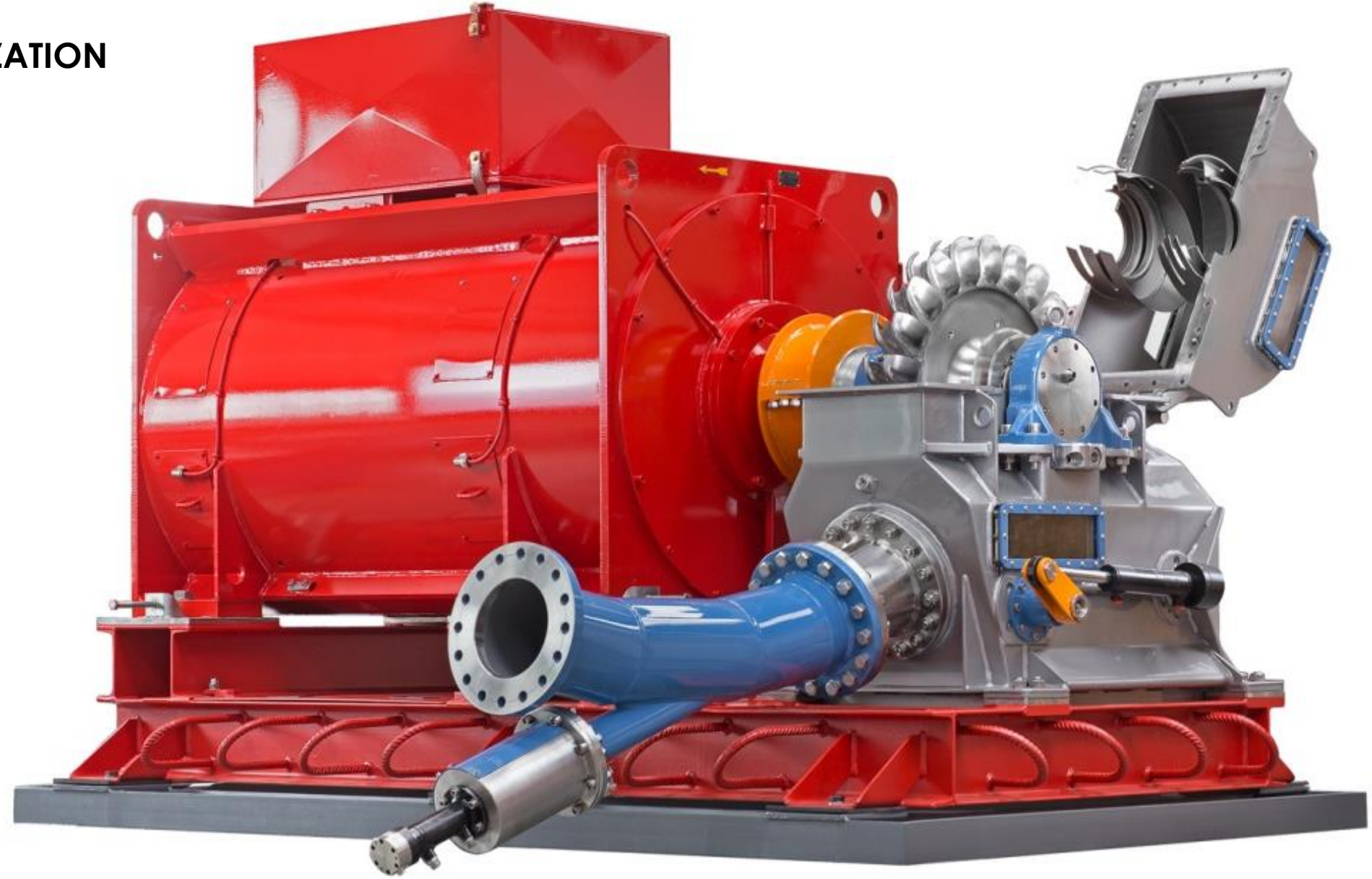
EXPERIMENTAL UNDERGROUND PUMP-STORAGE POWER STATION

MINE PART OF PUMP-STORAGE POWER STATION



EXPERIMENTAL UNDERGROUND PUMP-STORAGE POWER STATION

REALIZATION



EXPERIMENTAL UNDERGROUND PUMP-STORAGE POWER STATION

REALIZATION

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THANK YOU FOR YOUR ATTENTION!