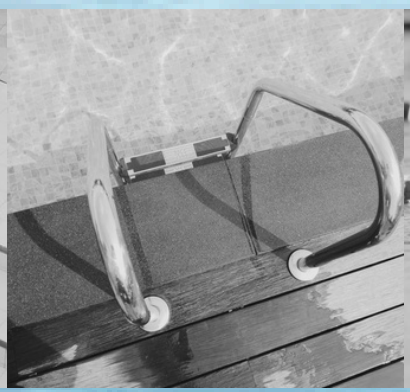
VBW ENGINEERING SP. Z O. O.

OKEANOS

Comprehensive ventilation solution
for swimming pool applications

www.vbw.pl

Spis treści

ABOUT US

VBW ENGINEERING

We are a Polish manufacturer of HVAC systems with over 30 years of experience. Since the early 1990s, we have been developing the VBW Engineering brand, delivering advanced ventilation and air-conditioning units to domestic and international markets.

Our key strength is a flexible approach to unit design, tailored to individual customer needs and the specific technical requirements of each facility.

Thanks to the knowledge and experience of our team, we deliver projects that require customization and technical support at every stage of the investment process.

VBW Engineering in numbers

30 years of experience in the HVAC industry

For 30 years, we have been actively operating in the HVAC market, becoming one of the industry leaders in air-conditioning equipment manufacturing.

13 sales and technical offices

VBW ENGINEERING has 13 sales and technical offices located throughout Poland, providing full after-sales support and service care.

Over 6,200 units annually

We produce more than 6,200 air-conditioning and ventilation units annually, tailored to customer needs.

Over 1,500 projects annually

We complete more than 1,500 projects each year, delivering standard ventilation units as well as custom-made units.

Deliveries to over 30 countries

Our units can be found in more than 30 countries around the world.

Over 200 employees

The VBW Engineering team consists of experienced specialists who combine extensive expertise with a passion for creating innovative solutions.

Pool air handling units

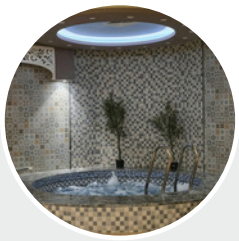
VBW Engineering offers air-conditioning units in a swimming pool configuration, designed for the ventilation of spaces with high humidity levels. They are used in public swimming pools, private indoor pools, as well as in hotel and spa facilities.

Swimming pool configuration

Units in swimming pool configuration are specialized air treatment devices designed to operate in environments with high humidity and exposure to chlorine compounds. They offer high corrosion resistance and meet the operating requirements of swimming pool facilities, ensuring reliable and long-term performance.

What are swimming pool air handling units used for?

Swimming pool air handling units provide a comprehensive solution for the ventilation, dehumidification, and heating of indoor pool halls in both private and public facilities. They help maintain proper air parameters and support the reduction of excess moisture. Thanks to appropriately designed air treatment systems, they offer high resistance to corrosion and chlorine compounds.



SPA & HOTELS

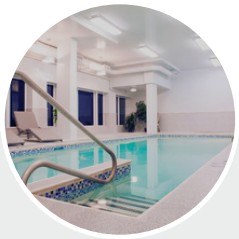
Air handling units in swimming pool configuration are used in hotel facilities and spa areas, where maintaining high air quality and user comfort is essential. They enable effective humidity control and help reduce excess moisture and odors.

AQUAPARKS

In aquaparks, air handling units play a key role in maintaining proper air quality. They help reduce excess moisture, odors, and chlorine compounds, supporting the safe and comfortable use of water attractions throughout the year.

SPORTS POOLS

Air handling units in sports pools are responsible for maintaining proper air quality as well as controlling humidity and temperature. They reduce excess water vapor, supporting user comfort and ensuring suitable conditions for physical activity.



PRIVATE POOLS

In private pools, air handling units support the maintenance of a clean and healthy indoor environment. They help control humidity, reduce the risk of condensation, and improve comfort in private pool areas.

How to select a swimming pool air handling unit?

Indoor air temperature values depending on pool water temperature

Type of room	Indoor air temperature [°C] depending on water temperature	
	min.	max.
Entrance hall, rooms adjacent to the pool hall, and stairwells	18	22
Changing rooms	24	28
Sanitary rooms, administrative rooms, and staff rooms	22	26
Showers with adjacent sanitary facilities	27	31
Pool hall	30	34

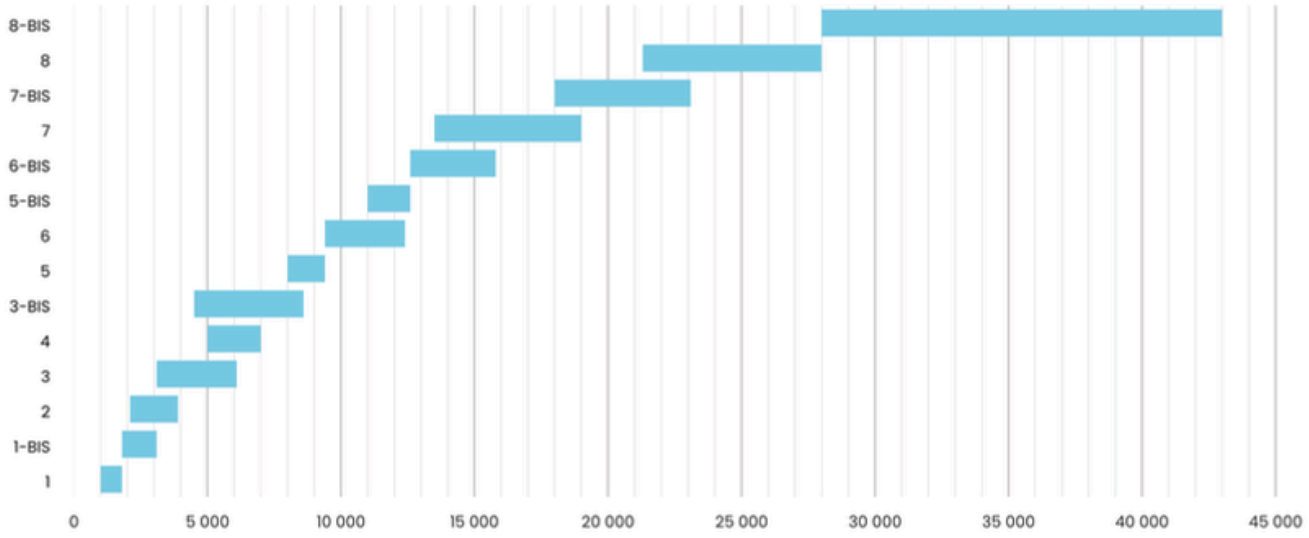
Pool water temperature range

Type of pool	Pool water temperature [°C]
General-purpose pool	24 -28
Swimming training pool	26-30
Pool for teaching small children to swim	28 - 32
Spa pool	23 - 32
Hydrotherapy pool	30 - 34

Relative humidity in the pool hall should be maintained within the range of 45–65%.

Indoor pool halls, due to significant moisture gains, require an effective ventilation system to remove excess humidity. It should be noted, however, that in a pool hall the ventilation system also performs a heating function. Therefore, it is necessary to carry out a heat and moisture balance to determine whether the ventilation airflow resulting from moisture gains is sufficient. Maintaining the proper humidity level requires removing humid air and supplying dry outdoor air.

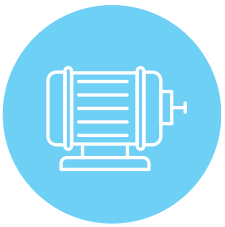
Capacity range – OKEANOS



Why choose our swimming pool air handling units?

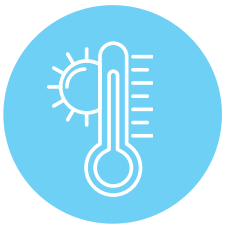
Advanced engineering solutions

We combine advanced technologies and modern engineering solutions to ensure effective heat recovery and high operating efficiency.



Heat pump system technology

OKEANOS air handling units can be integrated with a heat pump system, supporting heat recovery and increasing the overall energy efficiency of the installation.



Comfortable pool conditions

OKEANOS swimming pool air handling units provide thermal comfort and proper humidity control, creating suitable conditions in the pool hall.

Lower operating costs

High energy efficiency and properly selected solutions help reduce operating costs.

Technical support and consultancy

We provide support in the unit selection process as well as professional service consultancy.

Environmental protection

Our solutions support lower energy consumption and help reduce the environmental impact of the installation.

OKEANOS

Swimming pool air handling unit with enhanced resistance to corrosion and chlorine compounds.

Basic dimensions

14

Capacity range

1000 – 43 000 m³/h

Basic information

Casing

- Unit with an aluminum profile frame construction
- Outer and inner panels made of Magnelis ZM310 sheet steel
- Designed for indoor installation
- Unit insulation thickness: 50 mm

Heat recovery

- Heat recovery – plate heat exchanger / counterflow heat exchanger

Fans

- High-efficiency EC fans
- Fan casings made of Magnelis coated sheet steel
- Fan operation within the optimum speed range
- Reduced heat emission

Heater

- Water heater
- Heater casing made of galvanized steel, manifolds made of copper or steel
- Heater manifolds equipped with vent and drain connections
- The heater is selected by the manufacturer based on the parameters provided by the customer

Filters

- ISO ePM10 65% (M5)
- ISO ePM1 50% (F7)

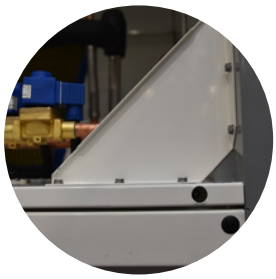
Automation

- Built-in power and control cabinet
- Integration with peripheral devices
- Plug&Play control system (option)

Special configuration

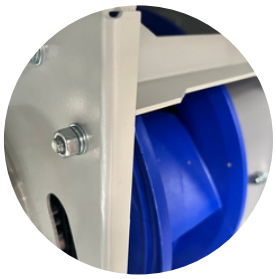
- additional water condenser for pool water heating
- reversible heat pump for summer air cooling
- electronic expansion valve for reversible systems
- additional water condenser for domestic hot water
- inspection windows with internal unit lighting
- configuration for outdoor unit installation
- control system adapted for BMS integration
- custom RAL colors for panels and frames

Advantages of the OKEANOS swimming pool air handling unit



Corrosion-resistant casing

Casing with high corrosion resistance, designed for operation in C4/C5 environments.



Protected fan motors

High-efficiency AC or EC fans ensure efficient operation. The motors are rated IP54 and protected with a powder-coated finish.

Heat pump

Optional heat pump integration supports heat recovery and increases the unit's energy efficiency. It enables heat recovery from exhaust air and its transfer to pool water heating.

Automation

The control system ensures intuitive operation and precise unit control in line with current demand. It enables temperature and humidity control in the pool hall.

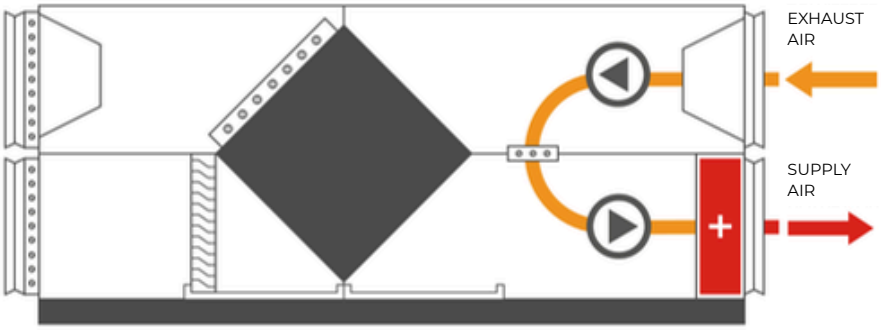
TÜVRheinland® CERTIFIED

Certificates

OKEANOS swimming pool air handling units are TÜV certified, confirming their high quality, reliability, and compliance with required standards.

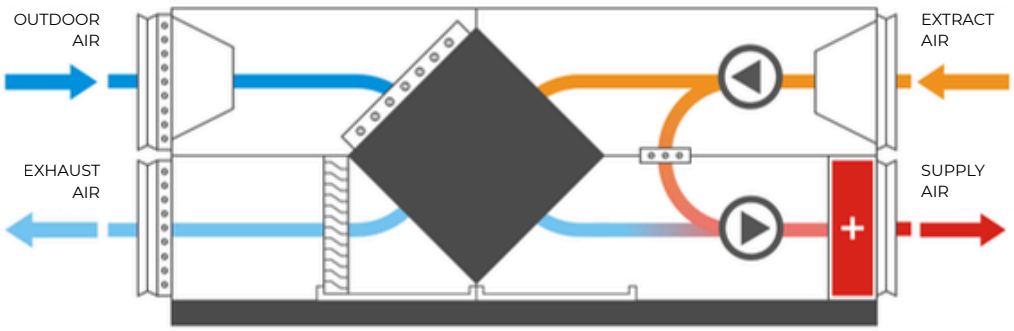
How swimming pool air handling units work

Unit operating modes with two-stage heat recovery



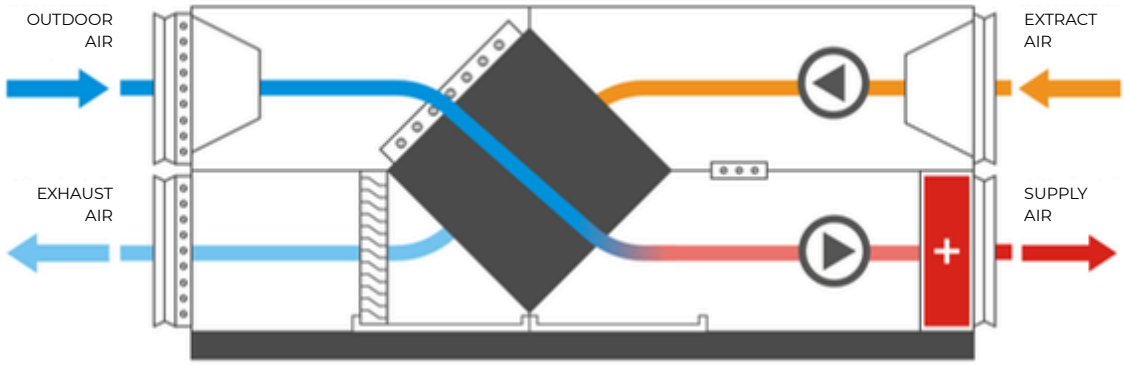
a) Recirculated air heating mode during pool non-use periods

Full recirculation is used during periods when the pool is not in use and the permissible indoor humidity level is not exceeded. The fans operate at reduced capacity, while the optional water heater heats the air to the minimum required temperature in the pool hall.



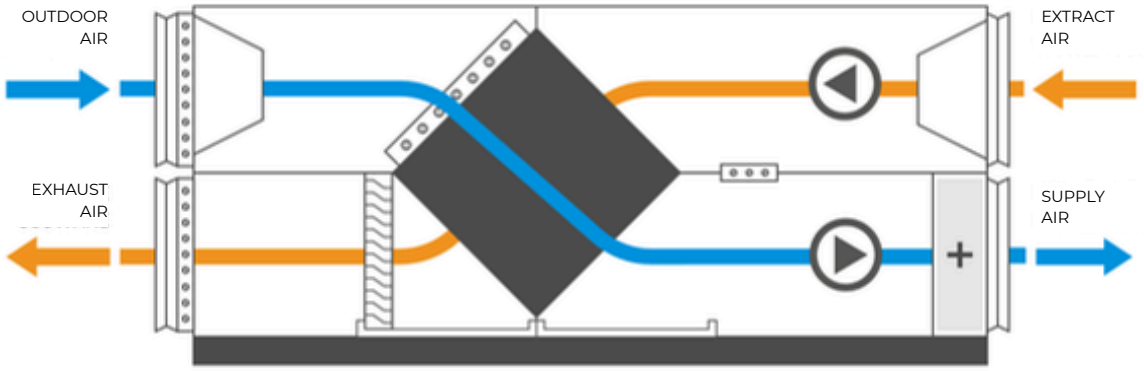
b) Air dehumidification mode during pool operation in winter

The extract fan removes air from the pool hall. In the mixing chamber, part of the air is recirculated, while the remaining part, after passing through the plate heat exchanger, is discharged outdoors. The proportion of fresh air depends on the humidity level in the pool hall. In winter, when the humidity ratio of outdoor air is low, the required amount of fresh air may be lower than the amount of extract air. Therefore, the proportion of fresh air in winter is usually low, unless there are contraindications such as elevated chlorine concentration. After passing through the heat exchanger, the fresh air is heated, then mixed with recirculated air, reheated to the required temperature, and supplied to the pool hall.



c) Air dehumidification mode during the intermediate season

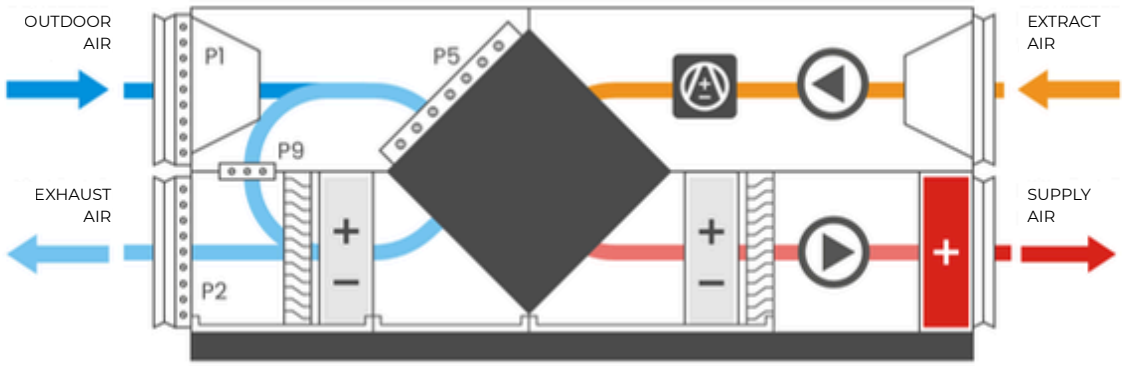
During the intermediate season, when the outdoor air temperature is lower than the air temperature in the pool hall and heat gains are significant, the fresh air is divided into two air streams. One stream passes through the heat exchanger and recovers heat, while the other is directed through the bypass. After being mixed again, the air reaches the required supply temperature without the use of the heater. The supply air temperature is controlled by changing the heat recovery rate in the heat exchanger.



d) Air dehumidification mode during the summer period

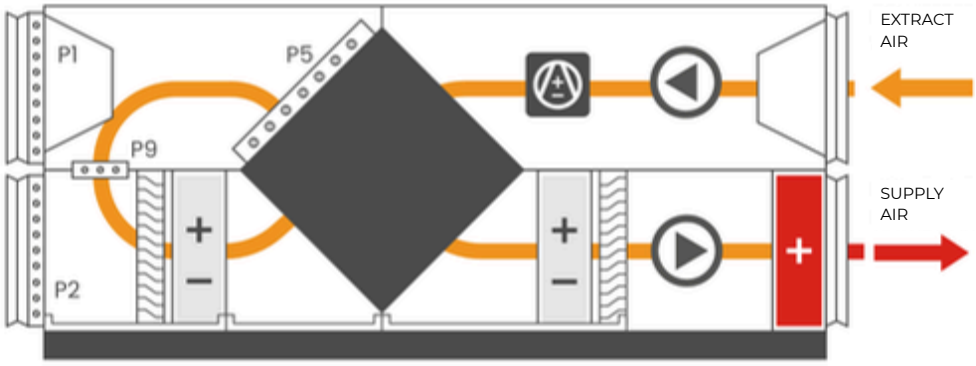
During the summer period, when the air temperature in the pool hall is too high, the fresh air is directed through the plate heat exchanger bypass, without heat recovery. The air is not further treated in the unit and serves only to dehumidify the pool hall.

Operating modes of the unit with three-stage heat recovery in the version with a plate heat exchanger and heat pump



a) Day mode – intensive unit operation

- the control system ensures thermal comfort through cascade temperature control, adjustment of the heat recovery rate in the plate heat exchanger, activation of the heat pump compressor, and control of the heater valve;
- optimum humidity in the pool hall is maintained by controlling the recirculation rate according to the current relative humidity;
- the unit operates with the minimum amount of fresh air required for hygienic purposes, at the nominal supply air flow rate.



b) Night mode – reduced unit operation

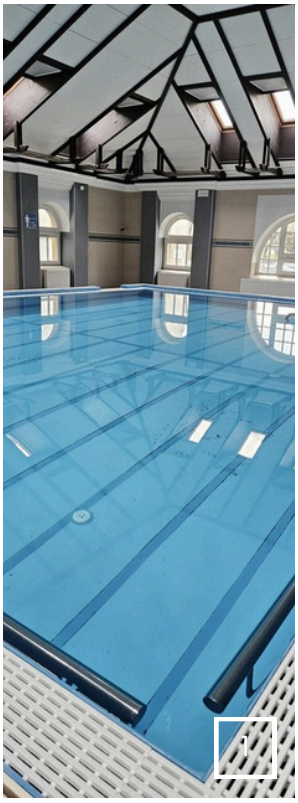
- operation in recirculation mode is used to maintain the required temperature and humidity;
- the control system maintains the set air temperature in the pool hall, while the fans operate at reduced capacity;
- temperature control is carried out by adjusting the heat recovery rate and the operation of the heater valve;
- optimum humidity is maintained automatically at nominal fan and heat pump capacity, while in the event of exceeding the permissible relative humidity or an insufficient share of recirculated air, the system regulates the supply of fresh air.

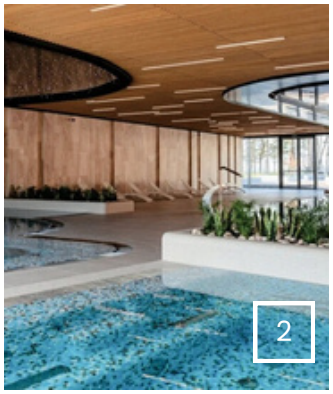
Ensure comfort and air quality with VBW Engineering systems

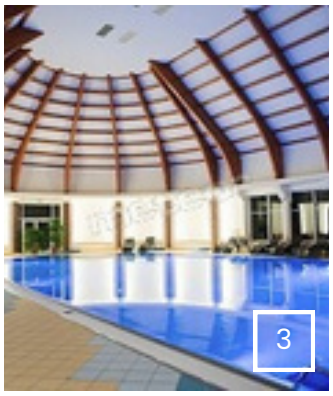
VBW Engineering air handling units ensure indoor comfort in facilities across Poland and in many locations worldwide. Our portfolio includes thousands of completed projects, including installations delivered for investors working with leading global brands.

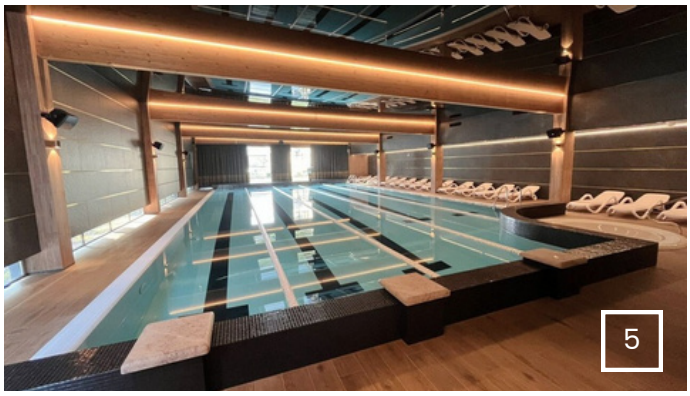
Projects

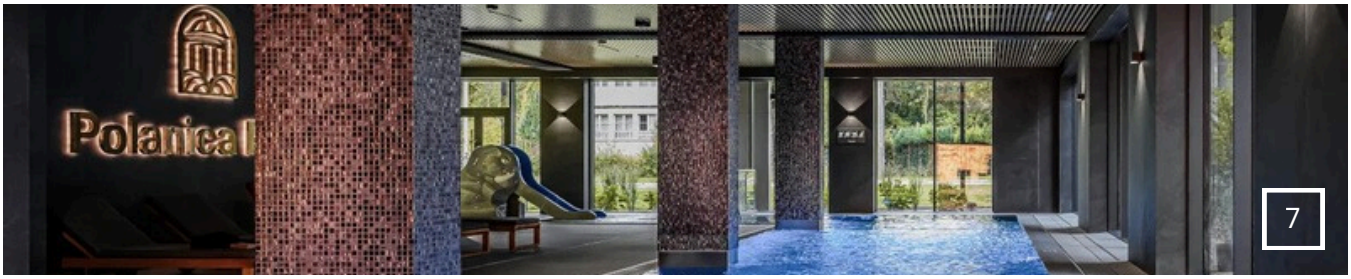
Selected projects – OKEANOS



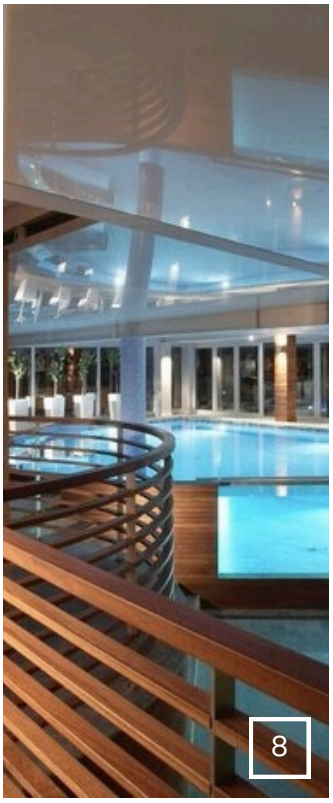








[1] Brine pool – Pomeranian Centre of Rheumatology (Sopot), [2] Wave Międzyzdroje Resort & Spa (Międzyzdroje), [3] Hotel Stok (Wisła), [4] Radisson Lake Hill Mazury Resort & Spa (Ostróda), [5] Aquario swimming pool (Wrocław), [6] Indoor swimming pool Wodnik (Czechowice-Dziedzice), [7] Polanica Park Apartments (Polanica-Zdrój), [8] Maloves Resort & Spa (Władysławowo), [9] Municipal swimming pool POSiR Winogrady (Poznań), [10] Piramida Medical Spa (Mrzeżyno), [11] Terma Bania (Białka Tatrzańska), [12] Sandra Spa Resort & Aquapark (Pogorzelica), [13] SUNDAY Resort Ustronie Morskie (Ustronie Morskie)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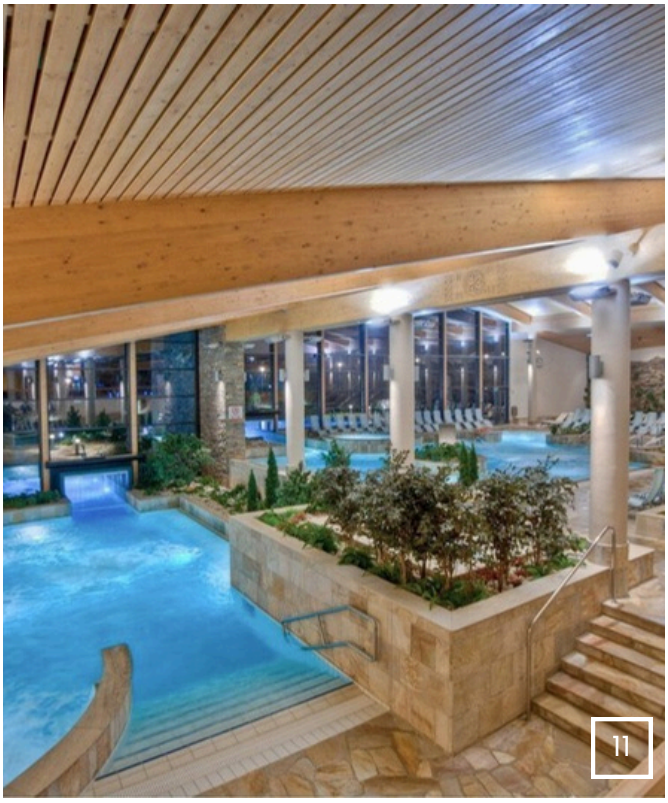
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