



Earth and ground water heat pumps
Thermalia®

Hoval

Responsibility for energy and environment

**Energy extraction from the earth or ground water.
For new buildings and renovations.**



Front page:
Close-up view of the inside of the scroll compressor in the Thermalia®.

Earth and ground water heat pumps Thermalia®

The Thermalia® earth and ground water heat pumps extract valuable energy from the earth or from ground water. With a verified COP value of up to 6.6, they generate more heat from the electrical energy input than any other heat pump technology.

The Thermalia® heat pump range covers all fields of application, from a single family home to medium-sized residential, commercial or municipal buildings. In their standard design, the devices are capable of generating flow temperatures of 60 to 62 °C. The H design can even produce temperatures of up to 70 °C. All models are available with a passive cooling function.



Strong Systems

A particularly strong system is the Thermalia®, together with other components from Hoval, and centrally controlled by the TopTronic®E.

Hoval system controller
TopTronic®E



Hoval solar energy systems



Hoval comfort ventilation



Hoval calorifiers



Hoval buffer storage tanks



Hoval calorifier heat pump



Hoval condensing gas and oil boilers

Earth and ground water heat pumps Thermalia®.



A+++
with controller

Thermalia® comfort (6-17)
Thermalia® comfort H (5-10)
Monoblock earth and ground water heat pump with a heat output of 5.8–22.3kW for single family homes or semi-detached houses.



A+++
with controller

Thermalia® twin (20-42)
Thermalia® twin H (13-22)
Monoblock earth and ground water heat pump with a heat output of 12.3–55.4 kW. Two output levels ensure optimum operation, higher efficiency and a long service life.



A+++
with controller

Thermalia® dual (55-140)
Thermalia® dual H (35-90)
Monoblock earth and ground water heat pump with a heat output of 17,5–181.1 kW. Two output levels ensure optimum operation, higher efficiency and a long service life. Extremely reliable operation thanks to the two separate cooling circuits.

Starting in September 2015 is the new classified ErP labelling for Space heaters, Combi heaters, Boilers and Energy Buffers in order to aid in Energy Efficiency and Resource Conservation.

Earth and ground water heat pumps Thermalia®.

Advantages at a glance.

Economical



20% energy input for 100% heat output

- **Excellent energy efficiency (COP)**
due to innovative technology
- **Consistently high efficiency**
by utilising energy from the earth or from ground water
- **Savings in energy costs**
due to highly efficient pumps (types up to 17 kW)
- **Energy Consumption Indicator**
for permanent cost control

Ecological



Use of ecological environmental energy

- **80% clean environmental energy**
from 20% electricity
- **Ecological energy** obtained from geothermal resources or ground water
- **CO₂-neutral and particularly environmentally friendly** when used in conjunction with green electricity
- **Simple adjustment of operating times**
facilitates energy-conscious heating

Sophisticated



Complete and flexible

- **Fast installation**
due to complete, ready-to-fit systems (types 5–17)
- **2 output levels for optimum operation** (as of type 20)
- **Modulating output** (Thermalia® compact M)
- **Smartphone -App**
for easy adjustability whilst you're on the road, and receiving system messages in real time
- **The latest interface standards** for connection to building automation or expected smart grids

Easy to use



High thermal comfort, quiet operation

- **High thermal comfort**
due to its predicting the future outside temperature and sunlight (using an online weather forecast)
- **Pleasant, quiet running**
due to low-noise, 3-bearing construction
- **Can be used for heating and domestic hot water**
- **Easily combined with solar installations**
for even greater eco-balance
- **Optional passive cooling function**
on all models provides cost-effective cooling

System controller TopTronic® E. The new generation.



Smart – cosy climate even when the weather is changing.



Ecological

Take responsibility for Energy and Environment and live comfortably at the same time. This is now easier than ever before.

With the new generation boilers and heat pumps from Hoval you will use less energy, reduce your environmental footprint and preserve the planet.

Reliable

You can fully rely on us.

The new generation Hoval boilers and heat pumps will automatically inform you and our service when they need maintenance or repair.

A Hoval service partner is always near you. More than 500 000 satisfied customers worldwide can confirm this. Our references speak for themselves.

Economical

The new generation Hoval boilers and heat pumps have best in class efficiency helping you to cut your energy bill.

They give you real time and historical information about their performance and efficiency so you always have an overview on your energy costs. With a click of a mouse.

Smart

Automatically use the weather forecast in real time to heat up your house in cold mornings but reduce the power in a warm afternoon.

Let you control your heating over your smartphone to adjust it to your daily or weekly routine - so you save energy during a working day but enjoy a cosy warmth in the evening.



Control your heating over your smartphone.



Easy control in the living room.



Hoval desk – overview on energy costs.



Automatic service information.

Thermalia®.

Energy for heating from the earth and ground water.



Thermal heat that comes from the subsurface

Thermalia® uses natural heat from the subsurface. Using electricity as the drive energy, the Thermalia® generates valuable energy for room and water heating. 1 kilowatt of electricity can produce 4.5 to 6.6 kilowatts of heat.

By improving numerous details, the developers at Hoval have once again substantially increased the cost-effectiveness of Thermalia® models. The Thermalia® generates flow temperatures of 60 to 62 °C, whilst in the H design, temperatures can even reach 67 °C. This makes it suitable for operation with conventional radiators, which is important in the renovation of old buildings or the upgrade of heating systems.



Top marks for cost-effectiveness

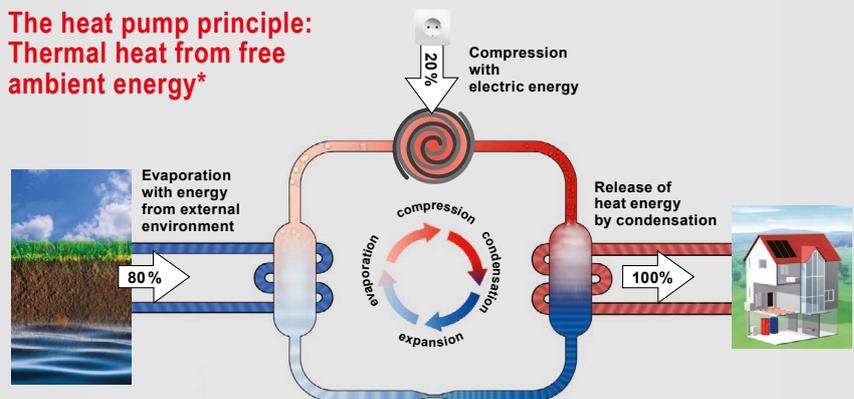
Thermalia® earth and ground water heat pumps have verified, above-average COP values of between 4.5 and 6.6. Behind the enhanced efficiency lies an entire range of technological developments in the control system, hydraulics and cooling circuit. Components that are perfectly aligned with one another combined with the use of large heat exchangers means that more heat is obtained from the electrical energy used.



High-temperature versions for use with radiators

The Thermalia® comfort H, twin H and dual H high-temperature versions are the ideal heat pumps for water heating and room heating using radiators.

The heat pump principle: Thermal heat from free ambient energy*



Heat pumps generate the thermal heat from free ambient energy by means of a 4-stage cycle:

1. The refrigerant in the heat pump is caused to evaporate. The huge amount of energy required for this purpose is obtained from the ambient energy (air, ground, water).
2. The refrigerant vapour is heated to a higher temperature by compressing it in a compressor. Electrical energy is used to drive the compressor.
3. The heated refrigerant vapour condenses (becomes liquid) and releases the energy stored inside it* (80% "evaporation energy" + 20% drive energy) in the form of heat to the heating system.
4. The refrigerant is expanded and the cycle begins again.

* This example relates to a COP of 5, i.e. 1 part (20%) electrical energy generates 5 parts (100%) heating energy.



Compact, complete, robust

The high-quality, robust frame casing of the Thermalia® comfort conceals all the technical components required for smooth, economical and safe operation. The ready-to-connect, fully equipped compact device is simple to transport and easy to install.



Silent

The structure of Thermalia® comfort and Thermalia® twin models has been completely re-designed. Instead of having feet, the devices now stand on anti-vibration rubber mats. The soundproofed, 3-bearing construction guarantees pleasant, quiet running. The high-quality sound and heat insulation lining further reduces sound emissions whilst also preventing heat loss.



High-efficiency energy-saving pumps

The Thermalia® (6-17) models and the Thermalia® compact M are fitted with high-efficiency, RPM-regulated circulation pumps. This significantly reduces the energy consumption, thereby increasing the cost-effectiveness of your Thermalia® system.





Certified quality

All Hoval heat pumps have been awarded the international heat pump quality seal. This official label guarantees excellent energy efficiency, great reliability and comprehensive customer service.



Cost-effective cooling function

All Thermalia® comfort, Thermalia® twin and Thermalia® dual models are available with a passive cooling function: a heat exchanger transfers the comparatively low temperature from the geothermal probes to the water in the underfloor heating. The floor stays cool on hot days, creating a pleasant indoor climate.



The cooling circuit in the heat pump does not need to be operating in order for this sophisticated cooling function to work, which means that it does not require any electricity. The function is conveniently controlled by the Top-Tronic®E in the heat pump and merely requires an additional heat exchanger.

Heating and cooling with energy from the earth or from ground water.

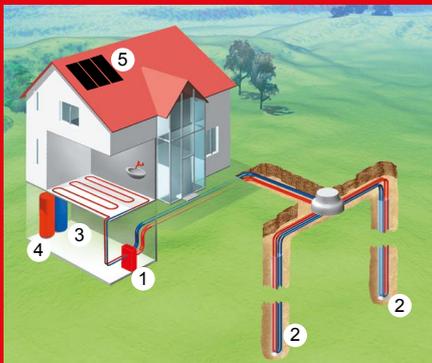
Earth and ground water as a heat source.

Although outside temperatures sometimes drop to well below freezing in winter, temperatures just a few metres below the ground stay at a moderate 8–12 °C all year round. As you get deeper below the ground, the temperatures increase by around 3 °C for every 100 metres. Ground water is also available in many places at a constant temperature of around 10 °C. Thanks to

the consistently high ambient temperatures underground, earth and ground water heat pumps achieve excellent levels of efficiency. The best way of extracting this underground energy depends on local conditions and the available space.

Utilising the difference in temperature, even in summer.

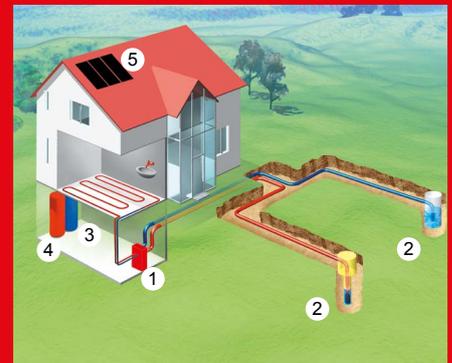
Even in summer, it is possible to make use of the constant temperatures underground. At this time of year, it is significantly cooler underground than in the fresh air, which means that the underground temperature can be used to cool indoor areas. All Thermalia® models provide an optional passive cooling function.



Earth heat pump with depth probe
 1) Heat pump, 2) Depth probe,
 3) Water heater, 4) Buffer storage tank,
 5) Solar installation

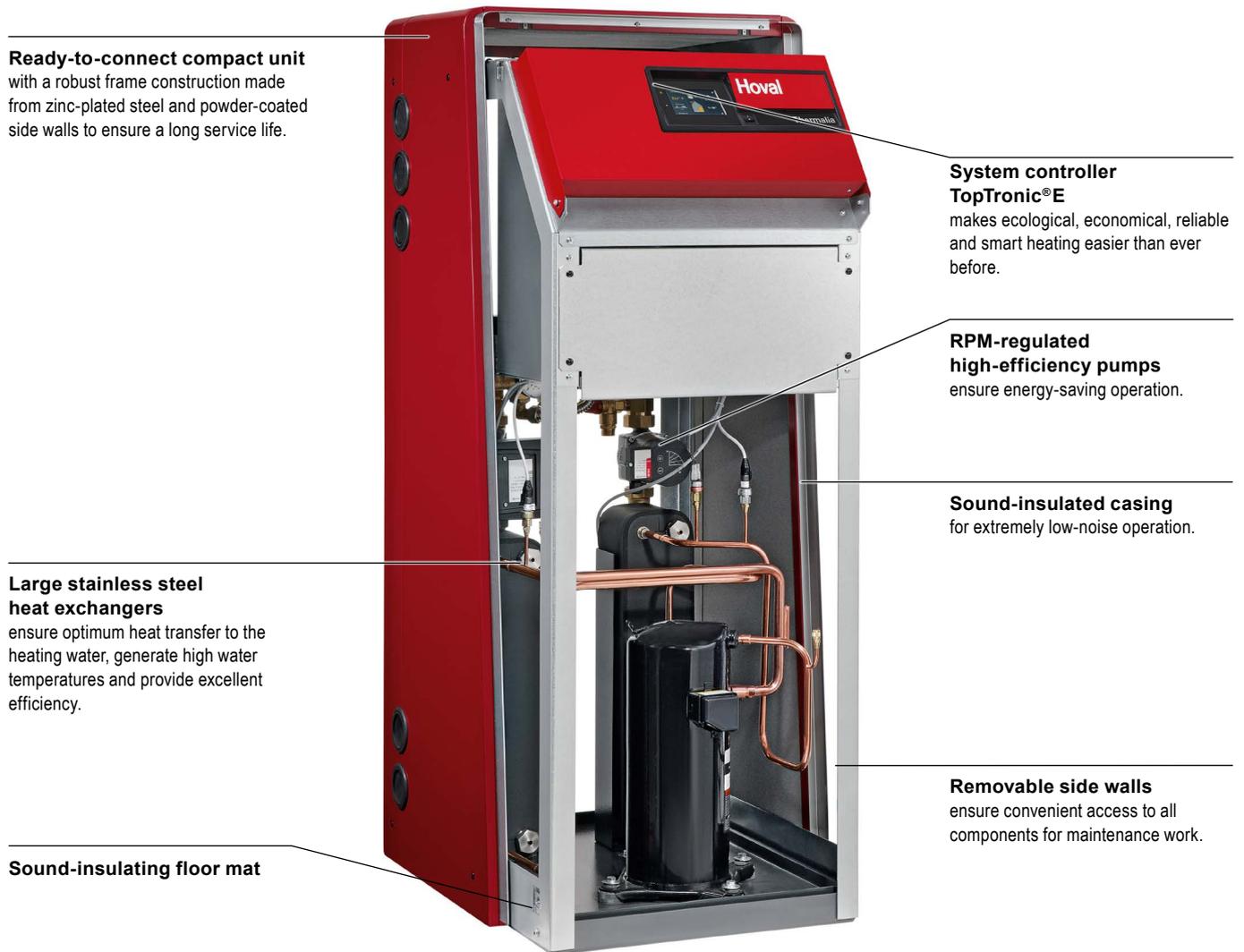


Earth heat pump with flat-plate collector
 1) Heat pump, 2) Flat-plate collector,
 3) Water heater, 4) Buffer storage tank,
 5) Solar installation



Earth heat pump with ground water
 1) Heat pump, 2) Extraction and absorption well,
 3) Water heater, 4) Buffer storage tank,
 5) Solar installation

Thermalia® comfort (6-17), Thermalia® comfort H (5-10). Complete, compact and extremely quiet – perfect for single family homes.



Ready-to-connect compact unit
with a robust frame construction made from zinc-plated steel and powder-coated side walls to ensure a long service life.

System controller TopTronic®E
makes ecological, economical, reliable and smart heating easier than ever before.

RPM-regulated high-efficiency pumps
ensure energy-saving operation.

Sound-insulated casing
for extremely low-noise operation.

Large stainless steel heat exchangers
ensure optimum heat transfer to the heating water, generate high water temperatures and provide excellent efficiency.

Removable side walls
ensure convenient access to all components for maintenance work.

Sound-insulating floor mat

Technical data Thermalia® comfort		(6)	(8)	(10)	(13)	(17)	H (5)	H (7)	H (10)
Energy efficiency class (package label with controller)		A++	A+++	A+++	A+++	A+++	A++	A+++	A+++
Heat output	kW	5.8	7.6	10.6	13.4	17.2	5.1	6.5	9.1
COP* (coefficient of performance)		4.5	4.6	4.8	4.8	4.7	4.4	4.5	4.6
Weight	kg	140	150	160	170	180	150	160	180
Dimensions (W/H/D)	mm	600 / 1490 / 750							

Performance data with brine at 0 °C/heating water at 35 °C (EN 14511)
* COP: ratio of heat output to energy input, e.g. COP 3.7 = 3.7 kW heat output with only 1 kW energy consumption.

Subject to modification

Thermalia® twin (20-42), Thermalia® twin H (13-22).

Two output levels – for blocks of flats.

Ready-to-connect compact unit

with a robust frame construction made from zinc-plated steel and powder-coated side walls to ensure a long service life.

Sound-insulated casing

for extremely low-noise operation.

Operation at two output levels

reduces the number of start-ups, thus improving cost-effectiveness and increasing the service life.

Sound-insulating floor mat



System controller TopTronic®E

makes ecological, economical, reliable and smart heating easier than ever before.

Large stainless steel heat exchangers

ensure optimum heat transfer to the heating water, generate high water temperatures and provide excellent efficiency.

Removable side walls

ensure convenient access to all components for maintenance work.

Sound-optimised design

Extremely quiet running thanks to 3-bearing, sound-insulated and thermally separated construction.

Technical data Thermalia® twin		(20)	(26)	(36)	(42)	H (13)	H (19)	H (22)
Energy efficiency class (package label with controller)		A+++	A+++	A+++	A+++	A+++	A+++	A+++
Heat output	kW	20.4	26.2	35.3	42.0	12.3	15.5	20.9
COP* (coefficient of performance)		4.9	4.8	5.0	4.8	4.5	3.9	4.6
Weight	kg	280	286	298	310	273	283	293
Dimensions (W/H/D)	mm	690 / 1120 / 765						

Performance data with brine at 0 °C/heating water at 35 °C (EN 14511)

* COP: ratio of heat output to energy input, e.g. COP 3.7 = 3.7 kW heat output with only 1 kW energy consumption.

Subject to modification

Thermalia® dual (35-140).

Two cooling circuits – for larger buildings.

Large stainless steel heat exchangers

ensure optimum heat transfer to the heating water, generate high water temperatures and provide excellent efficiency.

Large front doors

permit optimum accessibility for technical maintenance of the heat pump.

System controller

TopTronic®E

makes ecological, economical, reliable and smart heating easier than ever before.

Dual technology

Two independent cooling circuits improve operating reliability.

Two output levels

Fewer start-ups improve cost-effectiveness and increase service life.

Sound-optimised design

Pleasant, quiet running thanks to 3-bearing, sound-optimised and thermally separated construction.



Small installation space of only 1 m²

Technical data		(55)	(70)	(85)	(110)	(140)
Thermalia® dual						
Energy efficiency class (package label with controller)		A++	A++			
Heat output (R 410A)	kW	57.9	73.2	84.8	113.4	137.8
COP* (coefficient of performance)		4.6	4.6	4.6	4.6	4.6
Weight	kg	560	620	700	770	820
Dimension (H/W/D)	mm	1907 / 1066 / 774			2020 / 1316 / 774	
Thermalia® dual H		H (35)	H (50)	H (70)	H (90)	
Energy efficiency class (package label with controller)		A++	A++	A++		
Heat output (R 134a)	kW	34.9	52.5	70.9	87.3	
COP* (coefficient of performance)		4.3	4.4	4.4	4.3	
Weight	kg	491	700	770	800	
Dimension (H/W/D)	mm	1907 / 1066 / 774			2020 / 1316 / 774	

Heat output with brine at 0 °C/heating water at 35 °C (EN 14511)

* COP: ratio of heat output to energy input, e.g. COP 3.7 = 3.7 kW heat output with only 1 kW energy consumption.

Subject to modification

Thermalia® in practice. As versatile as the requirements.

Environmental energy for room heating and water heating in single family homes

Thermalia® ground-source heat pump

The Thermalia® ground source heat pump (12) with a brine ground collector supplies this single family home with energy for room heating and water heating.



Room heating and water heating using energy from the ambient air.

Maximum efficiency in single family homes through combination with a comfort ventilation system

Thermalia® ground source heat pump

Thermal solar plant

HomeVent® comfort ventilation system

A family in Vorarlberg, Austria, selected a combination of a Thermalia® ground source heat pump (8), HomeVent® comfort ventilation system and a solar plant. The HomeVent comfort ventilation system with its heat and humidity recovery provides a pleasant indoor climate.



Efficient heat generation and ventilation comfort without heat loss.

Plus-energy building complex with heating network and SmartGrid

Thermalia® twin ground water heat pump

HomeVent® comfort ventilation system

What was once an old farm is now a building complex with an exemplary energy record. A Thermalia® twin (20) ground water heat pump with its suction well supplies the small heating network. A photovoltaic system with a SmartGrid supplies the electricity to drive the heat pump. The HomeVent® comfort ventilation system with heat and humidity recovery provides a pleasant indoor climate.



Model ecological solution in a complex with residential and commercial buildings: A heat network provides heat from a ground water heat pump, comfort ventilation system with heat and humidity recovery, and photovoltaic system with SmartGrid.

Heat and cooling for ventilating a production hall

Thermalia® H ground source heat pump

RoofVent® supply and extract air handling unit

2 RoofVent® supply and extract air handling units ensure the appropriate hall climate in this production company. The room heat is supplied by the Thermalia H (70) ground source heat pump. In summer, the hall is cooled via their brine circuit.



Ground source heat pumps are also suitable for Industrial and production halls.

Solutions you can rely on.

Hoval

Responsibility for energy and environment.

The Hoval brand is internationally recognised as one of the leading suppliers of indoor climate control solutions. Around 70 years of experience have given us the necessary capabilities and motivation to continuously develop exceptional solutions and technically superior equipment.

Maximising energy efficiency and thus protecting the environment are both our conviction and our incentive. Hoval has established itself as an expert provider of intelligent heating and climate control systems that are exported to over 50 countries worldwide.



Hoval indoor climate systems

Indoor climate systems ensure top air quality and economical usability. Hoval has been installing decentralised systems for many years. The key to its work is using combinations of multiple air conditioning units (even those of different types) that can be controlled individually, but also together as a single system. This enables Hoval to respond flexibly to a wide range of requirements for heating, cooling and ventilation.



Design support from experts.

Take advantage of the expertise of our experienced specialists. We will be happy to support you throughout all project phases when designing your system.

Working in close cooperation with you and taking into account all the specifications of the energy supplier, we develop the most efficient and cost-effective solution for you.



Hoval service expertise.

Hoval systems are professionally commissioned by specially trained and experienced Hoval service technicians, ensuring that the systems will operate perfectly from day one.

Maintenance and troubleshooting are performed on-site by an expert customer service team.

Hoval Group

Switzerland

Hoval AG
8706 Feldmeilen ZH
www.hoval.ch

Austria

Hoval Gesellschaft m.b.H
4614 Marchtrenk
www.hoval.at

Germany

Hoval GmbH
85609 Aschheim-Dornach
www.hoval.de

United Kingdom

Hoval Ltd.
Newark Notts. NG 24 1JN
www.hoval.co.uk

Italy

Hoval s.r.l.
24050 Zanica (BG)
www.hoval.it

France

Hoval SAS
67118 Geispolsheim
www.hoval.fr

Denmark

Hoval a/s
8660 Skanderborg
www.hoval.dk

Bulgaria

Hoval Corporation - Branch Bulgaria
1797 Sofia
www.hoval.com

Croatia

Hoval d.o.o.
10 000 Zagreb
www.hoval.hr

Czech Republic

Hoval spol. s r.o.
312 04 Plzeň
www.hoval.cz

Poland

Hoval Sp. z o.o.
62-002 Suchy Las
www.hoval.pl

Romania

Hoval s.r.l.
Voluntari 077190
www.hoval.ro

Slovakia

Hoval SK spol. s r.o.
04001 Košice
www.hoval.sk

China

Hoval Ltd.
100016 Beijing P.R. China
www.hoval.com.cn

Singapore

Hoval Corporation
Singapore 187966
www.hoval.com



Your Hoval Partner:

Hoval Aktiengesellschaft
Austrasse 70
9490 Vaduz, Liechtenstein
www.hoval.com