OCTOPUS

AN ENVIRONMENTALLY FRIENDLY HEAT PUMP - TODAY AND TOMORROW -

Octopus has developed and produced heat pumps since 1981 and has, through many years´ development, taken forward the best possible solution for the environment and the customer.

The latest product IS (Ice-Stick) has been developed and been renewed since 1991 and exists today in Sweden, Norway, Denmark, Finland, Estonia, Lithuania, Poland, Germany, Holland, Italy, Romania and Ireland.

The customer is our focus therefore our principles are simplicity, environment and cost effectiveness. This governs all activity in Octopus and we focus on production, installation and service.

" Octopus for a sustainable future "

THE ICE-STICK HEATS EFFICIENTLY AND ENVIRONMENTALLY FRIENDLY

Our heat pump, the Ice-Stick, is a complete solution, very simple to install and start-up in a very short time. With the Ice-Stick one neither has to dig or drill the land.

The energy for heating comes when the aluminium profiles condense the steam in the air to water and later pass on to become frost.

With this heat pump the heating of your house, warehouse, weekend cottage etc. will be a lot more cost-effective than, for example oil or direct electrical. With a heat exchanger the heat is transferred to the water carrying system in the building.

The Ice-Stick can very well be docked to your current water carrying systems, i.e. oil, pellets, electrical, gas or district heating.

WHY AN ICE-STICK?

- The Ice-Stick saves energy in an environmentally friendly way.
- Once the Ice-Stick is installed, set the temperature you desire to have in the house, the rest is done by the Ice-Stick year after year. That is how simple an Ice-Stick is.
- With the Ice-Stick you will not destroy the whole of your garden or risking contaminating our already hard strained ground waters.
- The Ice-Stick uses only nature's forces when defrosting itself.
- The safe operation depends on the simple design.
- The Ice-Stick only depends on one moving part - the compressor.

SIMPLE CONTROL THAT GIVES AN EVEN INDOOR TEMPERATURE

The Ice-Stick knows of the indoor temperature and then governs both the compressor and boost heat. It also knows the heat pump water temperature and the pressure in the refrigerant circuit and checks that a machine kind operation is maintained.

The need for heat in a house depends on many different factors. A big part of the year it is enough with energy from sun, people and household devices. During autumn, winter and spring, however the house will need to be heated some more. How much more varies depending on the house's energy density, ventilation, household heat, outdoor temperature, rains, distortion and sun.

OctoEL (the Ice-Sticks control system) deals with this. It will only produce the amount of heat the house needs in order to hold an even indoor temperature. With the OctoEL it never produces more heat than needed, a lowest possible condensing and thereby also highest possible saving.

" A brilliant and simple design "

HOUSE IN TYRINGE, SCANIA, SWEDEN

Construction year	2003
Heated area	265 m^2
Heat pump model	IS 48X
Heating system	H_2O floor heating
Temperature needed	22 ^{o}C
House electricity incl heating	9.600 kWh/år
Boost	3 m^3 wood/år

- Octopus™ Ispinne 48X with water carried floor heating is used for heating
- The Ice-Stick uses an electric boost and wood as extra boost

INDUSTRIAL BUILDING IN ESLÖV, SCANIA, SWEDEN

Construction year	1999
Heated area	840 m^2
Heat pump model	2 st IS 42X
Heating system	H_2O floor heating
Temperature needed	21 ^{o}C
Electricity	22.000 kWh/år

- The building is used as an office, warehouse and workshop

THE PRINCIPLE OF A HEAT PUMP

1. The heat occupying part - low pressures

This part of a heat pump is called evaporator. Through the evaporator the refrigerant runs with a low temperature and boiling point. The evaporator is heated by nature and this causes the refrigerant to evaporate.

2. Pressure increasing part - high pressures

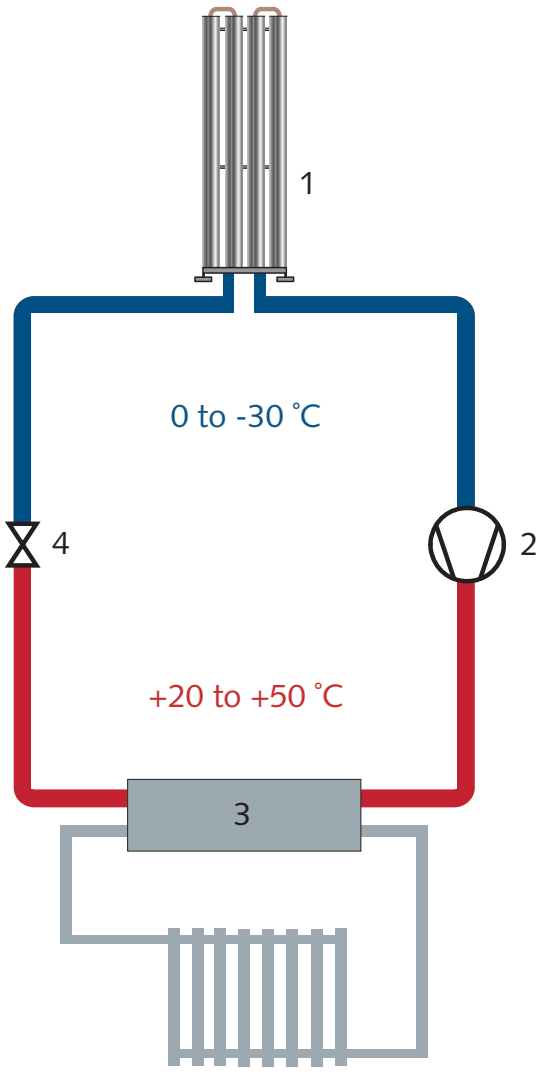
This part is the compressor. The warmed refrigerant comp rhyme avalanches and the pressure increase so that both the temperature and its condensing point ascends strongly.

3. Heat giving part - high pressures

This part of the heat pump transfers the heat to the house and is called a heat exchanger. The refrigerant passes through the heat exchanger with a high-temperature and condensing point. In the heat exchanger the refrigerant is cooled down by the house's heating (e.g. radiators, floor heating), which leads to that the refrigerant condenses.

4. Pressure lowering part - low pressures

This part consists of an expansion valve which expands the cooled refrigerant. This lowers the pressure which results in a substantial lowering of temperature and boiling point of the refrigerant.

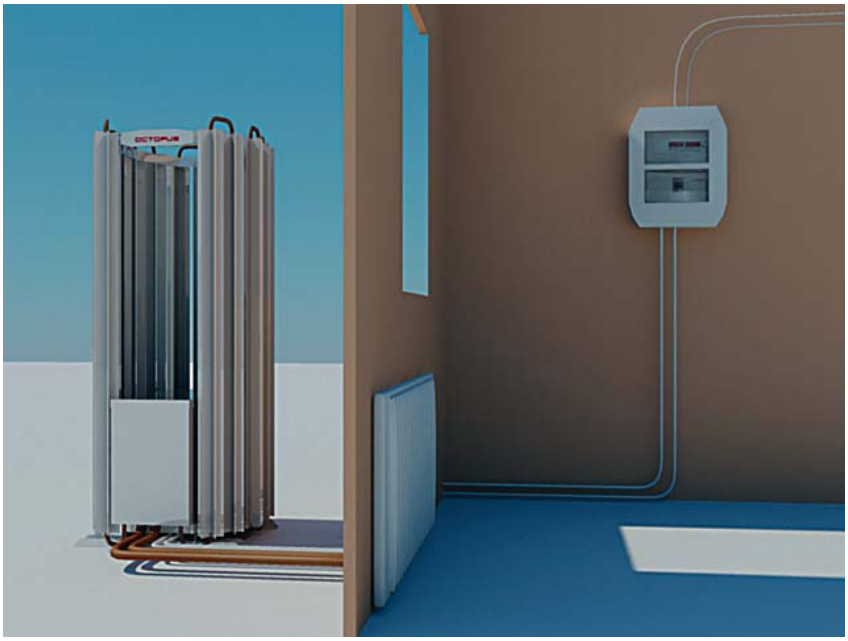


INSTALLATION ALTERNATIVES

We have chosen to do the Ice-Stick in two different designs. One unit called X and the other called Xp.

The different alternatives can simply be docked to the existing water carried systems e.g. oil, pellets, electrical, gas or district heating.

Xp means that the heat pump module stands detached from the Ice-Stick and thereby can be placed where it is most appropriate. In the boiler-room or next to the house body. With an Xp the area between the Ice-Stick and heat pump module will function as land heat.



X means that the heat pump module is placed in the Ice-Stick thereby it is two isolated water tubes and two electricty cables that have to be drawn between the house and the Ice-Stick. The control OctoEL is placed indoors.

TECHNICAL DATES

Models Octopus™ IS	Unit	IS48X/XP	IS61X/XP	IS81X/XP
Al-Profiles	pcs	12	12	2 x 12
Electrical		400V, N3-phase	400V, N3-phase	400V, N3-phase
Fuse	A	10	10	16
Compressor, type		Scroll	Scroll	Scroll
Compressor, max input	kW	3,0	3,7	5,0
Compressor, volume	m³/h	11,41	14,4	19,2
Max HP water carried	°C	55	55	55
Refrigerant Gasol/R290	kg	~1	~1	~2
Closing pressure min/max	bar	1,5/23	1,5/23	1,5/23
Closing temperature evaporating/condensing	°C	-33/+64	-33/+64	-33/+64
Dimension evaporator (WxDxH)	mm	810x980x2220	810x980x2220	2 x 810x980x2220
Dimension HP module (WxDxH)	mm	515x555x630	515x555x630	515x555x630
Weight evaporator	kg	97	97	2 x 97
Weight Heat pump module	kg	87	92	102
Control unit		OctoEL 10	OctoEL 10	OctoEL 16

OUR MODELS

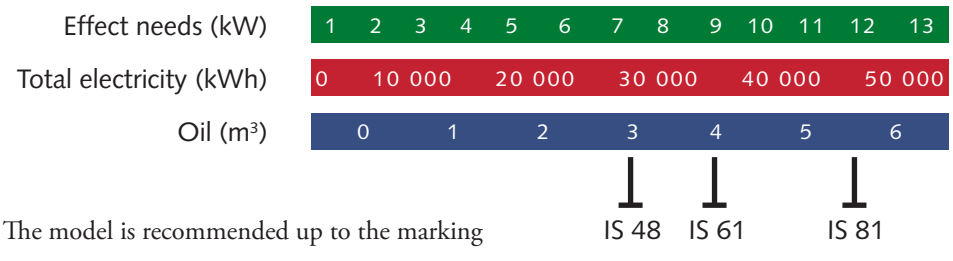
IS 48
For the smaller house with a normal energy consumption.

IS 61
Combine this model with 30 metres land loop and get more energy the coldest days.

IS 81
For big houses and industrial premises. This model comes with two Ice-Sticks.

DIMENSION

Choose one of the lying piles and then choose the heat pump model.



The model is recommended up to the marking

Octopus Energi AB
Box 161
SE-243 23 HÖÖR

www.octopus.tm