

Polish
Product of
Future

Energy Saving Ice Thermal Storage

Innovative source of savings

+
**Chiller or
Ice Thermal Storage?**

Discover benefits of innovative solution



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What should you consider when choosing a cooling system?

Are you planning investment, which important part is cooling installation? To be able to enjoy with the high reliability and energy efficiency of system, pay attention to a few important issues – such as operating parameters and service. With our investor checklist will be sure of the right choice, ideally suited to the needs.

✓ Performance and profit

Remember that seasonal factor of efficiency parameter SEER and SEPR determines consumables costs. Higher value, lower electricity consumption.

✓ User comfort

One of the key parameters of cooling systems is the level of generated noise and full remote control capability.

✓ Technology and quality

Don't forget that quality of device components determines reliability of your system. Note whether devices have been tested by independent certifying units.

✓ Warranty and service

How long is warranty period? Do you have contact with service? What is the cost of maintenance services during post-warranty period?

Manufacturing plant

Innovation leaders



**Factory of innovative Ice Thermal Storage ICE ON is located
in Przemysłowa 8 street, Łazy near Łuków.**

The production line is fully automated and meets all safety requirements. It is one of the most modern production plants of this type in the HVAC industry located in Poland.

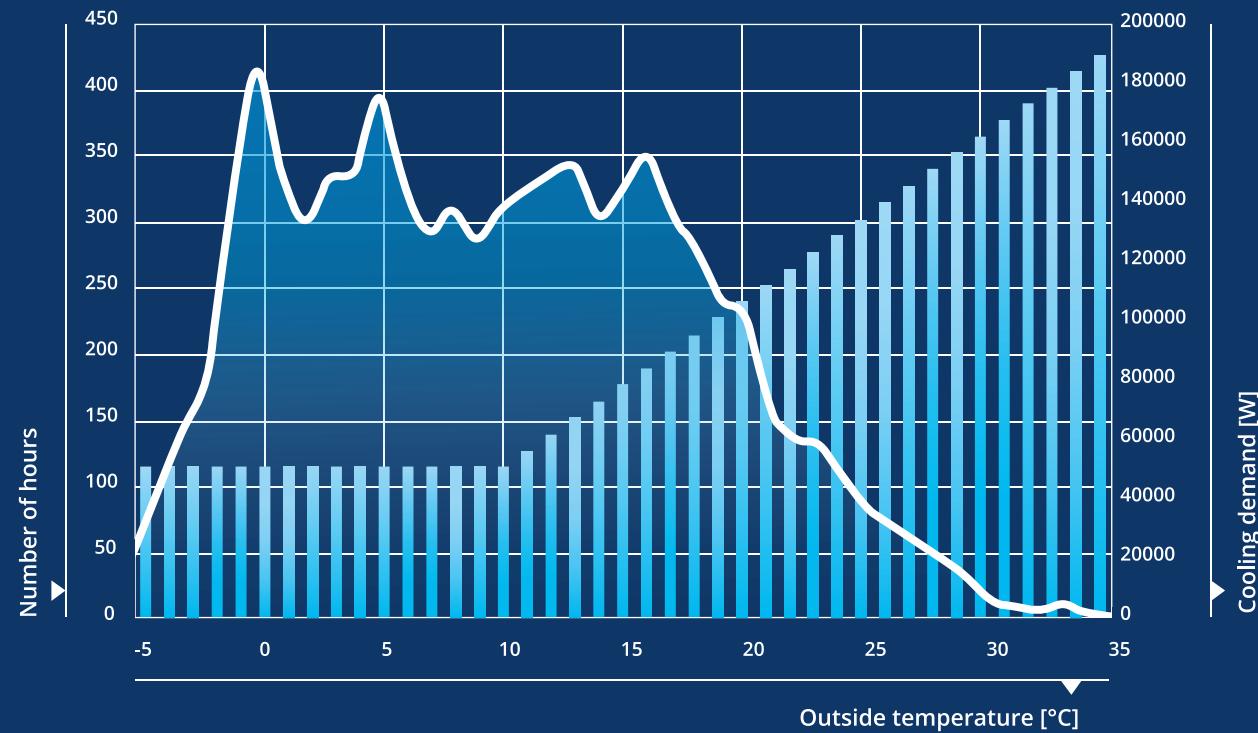
Manufacturing plant

Advanced technology



Thermal load distribution

Annual demand



Meteorological data for Warsaw (Okęcie)

For typical meteorological year in period 2003-2018 in which typical following months are:

Jan=2014; Feb=2009; Mar=2008; Apr=2010;
May=2014; Jun=2015; Jul=2015; Aug=2012;
Sep=2012; Oct=2005; Nov=2008; Dec=2018.

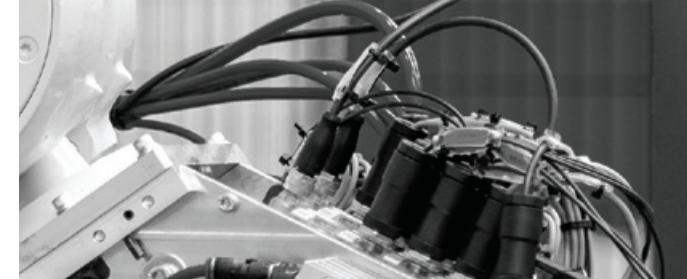
Legend:

- - Cooling demand
- - Number of hours

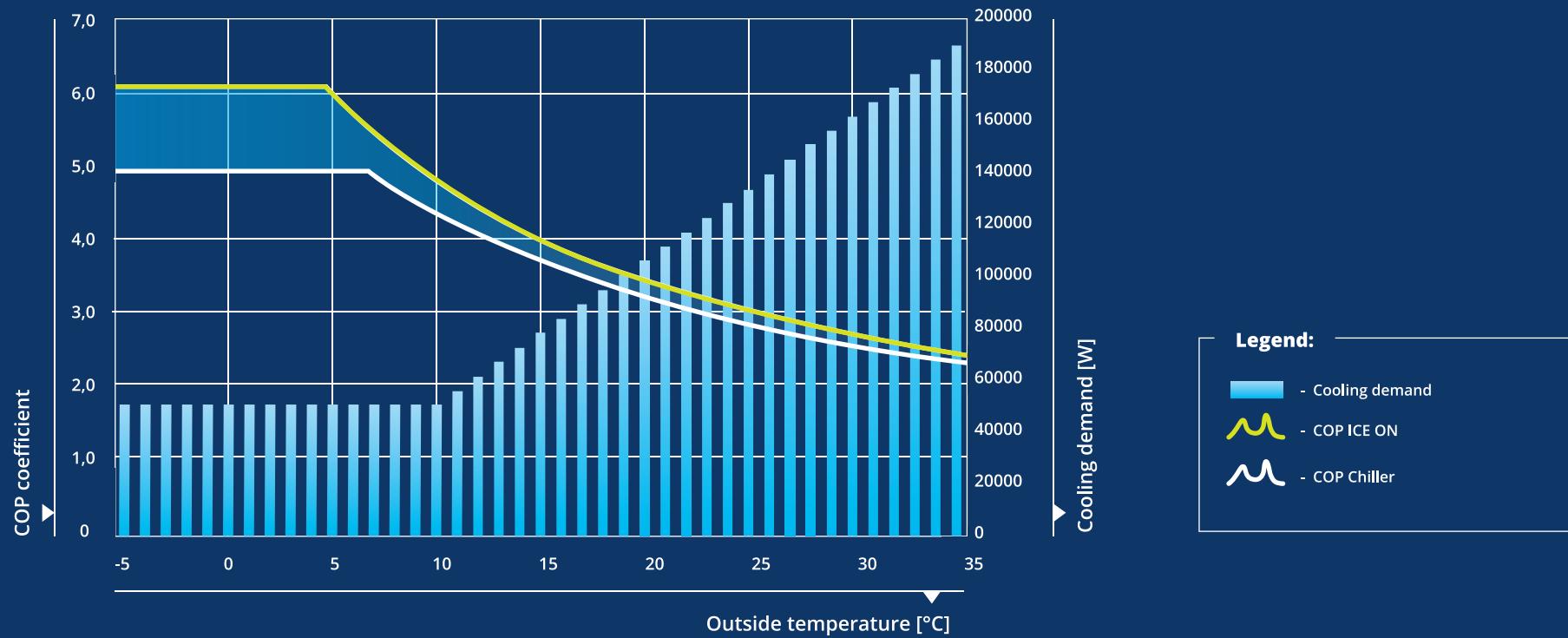
t [°C]	<-5	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
No hours	376	53	98	144	187	323	415	339	302	334	339	395	331	294	309	288	311	325	337	343	305	327	350	307	280	242	229	160	137	132	108	84	71	58	47	33	15	10	7	11	4	0

Efficiency differences

Energy saving applications



COP coefficient and cooling load as a function of outside temperature

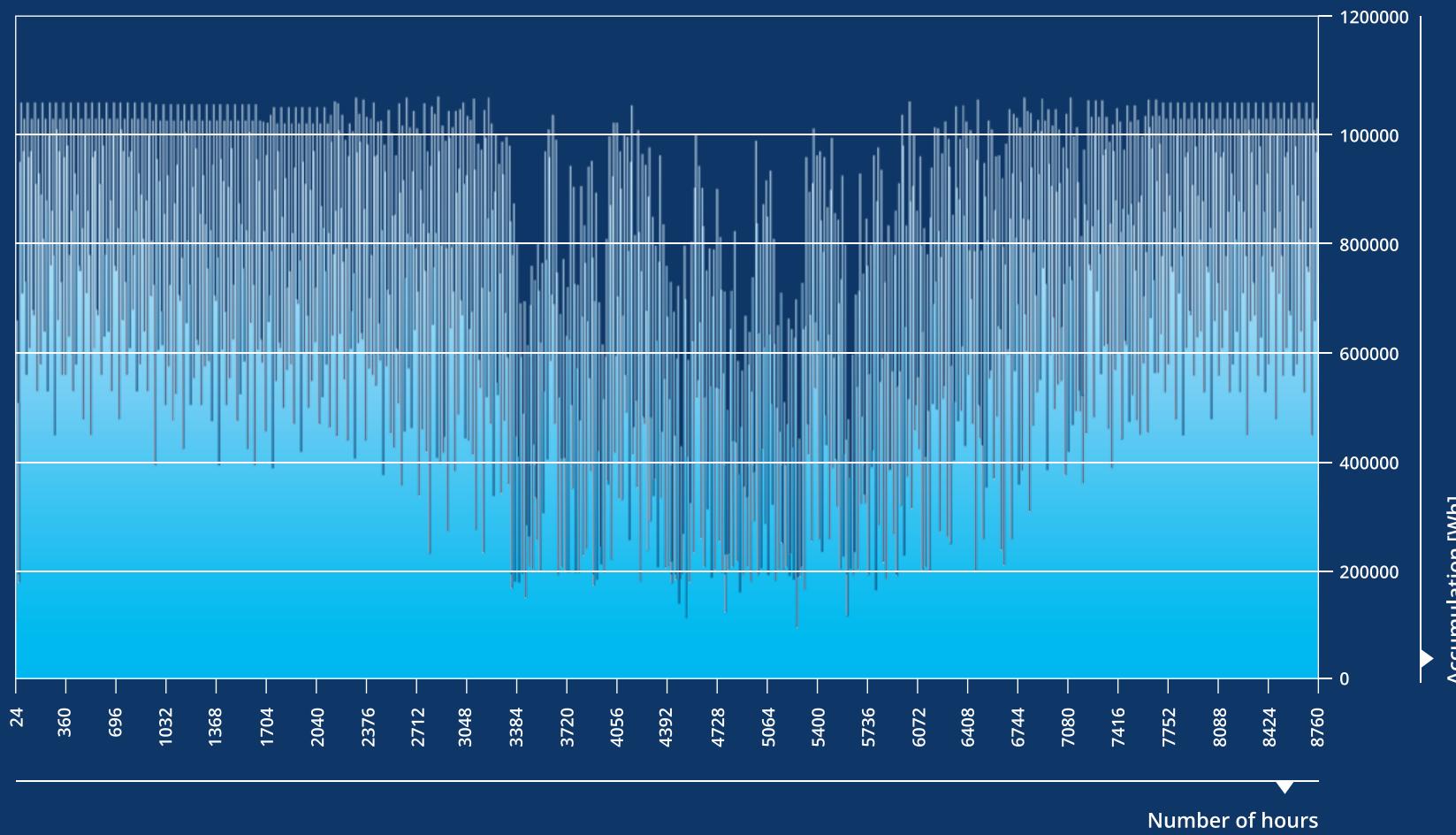


Annual accumulation rate

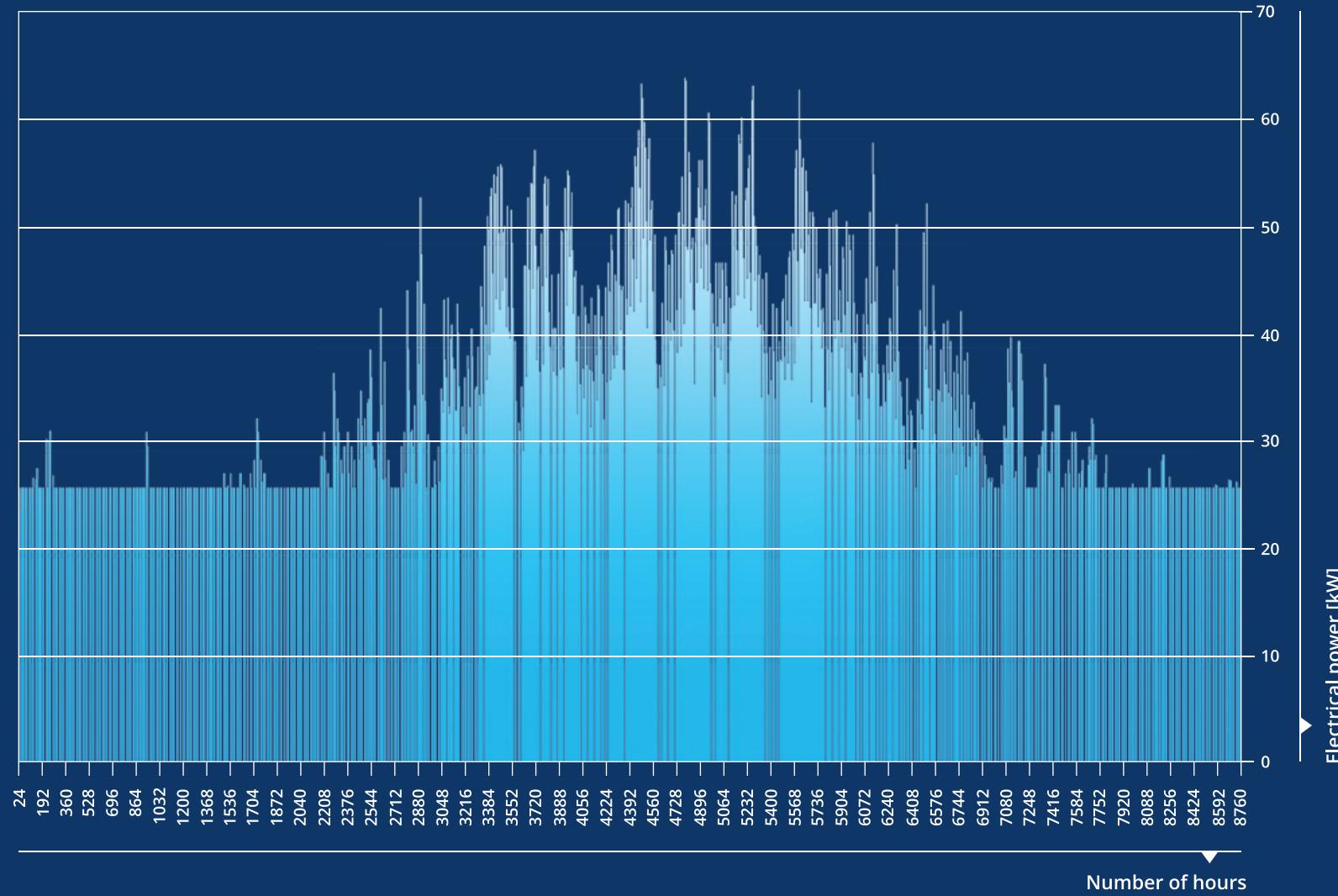
Coverage of demand from phase transition



ICE ON-1000 Ice Thermal Storage loading level over the year



ICE ON-1000 Ice Thermal Storage electric power consumption over the year



Comparison of chiller and ICE ON-1000 Ice Thermal Storage

Technical details



By producing cooling energy in the form of ice:

- ✓ You reduce electricity costs,
- ✓ You care about the environment,
- ✓ You build a modern image of your company



	Typical air-cooled chiller	ICE ON Ice Thermal Storage
Efficiency	SEPR~3.8	SEPR~5.8 [34%↑]
Unit consumption for 1 MWh cooling energy	263 kWh	172 kWh [34%↑]
Noise level	85 db(A)	80 db(A) [6%↓]
Average annual operating savings	-	72.000 PLN
Investment cost	100%	250%

Technical data may be changed by the manufacturer without prior notice or giving a reason. Up-to-date information on our products is available at www.iceon-engineering.com

Energy market trends

Energy price quotations



Stock exchange prices of electricity in 2000-2021 [Poland]

Data: Monthly Average Index of RDN Base TGE, data source WysokieNapiecie.pl | October 2021



Electricity exchange prices are the highest in history due to many factors, such as:

- increase in the prices of CO₂ emission allowances
- EU climate policy
- instability of the energy market

The prospects for coming years include further, sharp increases in electricity prices.

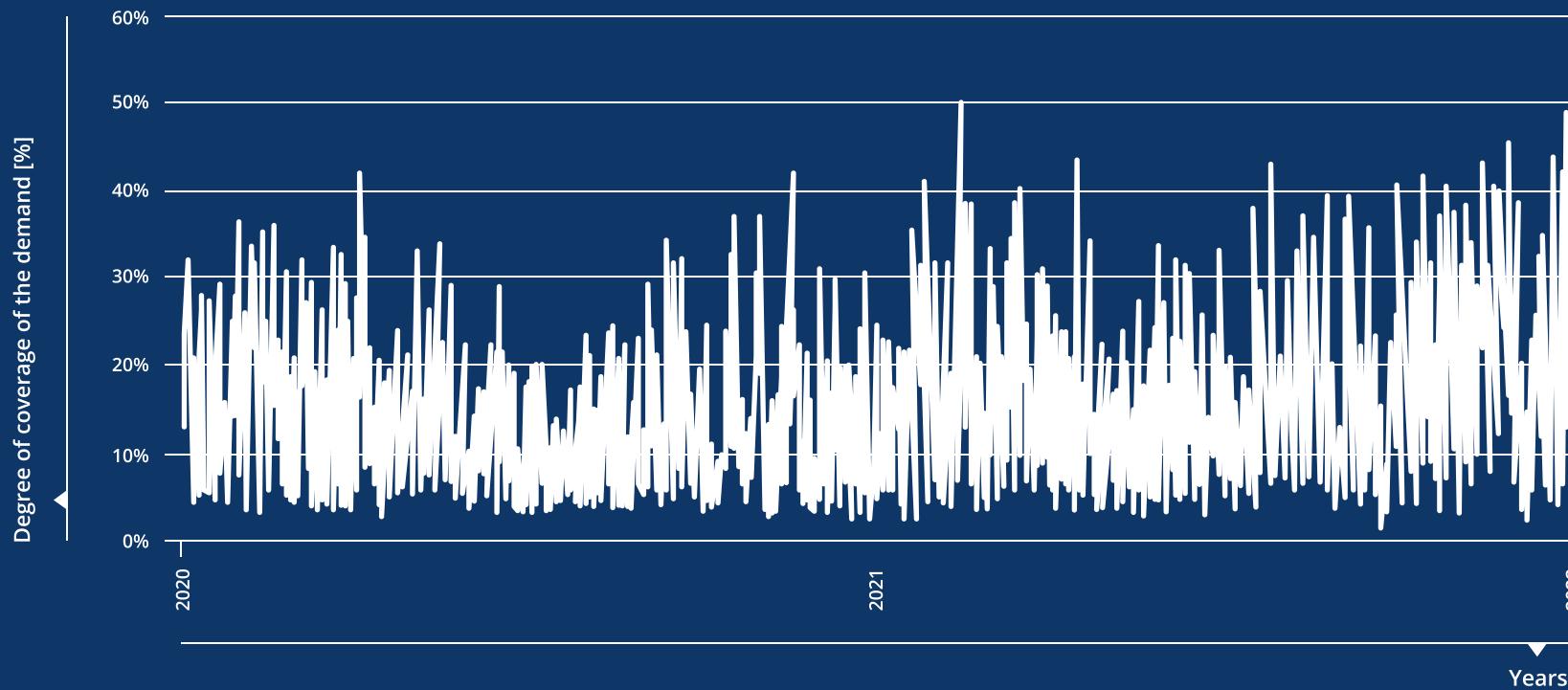
Potential of alternative energy sources

Green energy



Share of wind and solar power plants in covering Poland's demand for power

Data: PSE | March 2022



Renewable energy sources (RES) in Poland provided to 10 GW power system (data from March 28, 22), covering nearly half of the entire country's electricity demand. This historic record shows what is the current potential of alternative energy sources in Poland to be used.

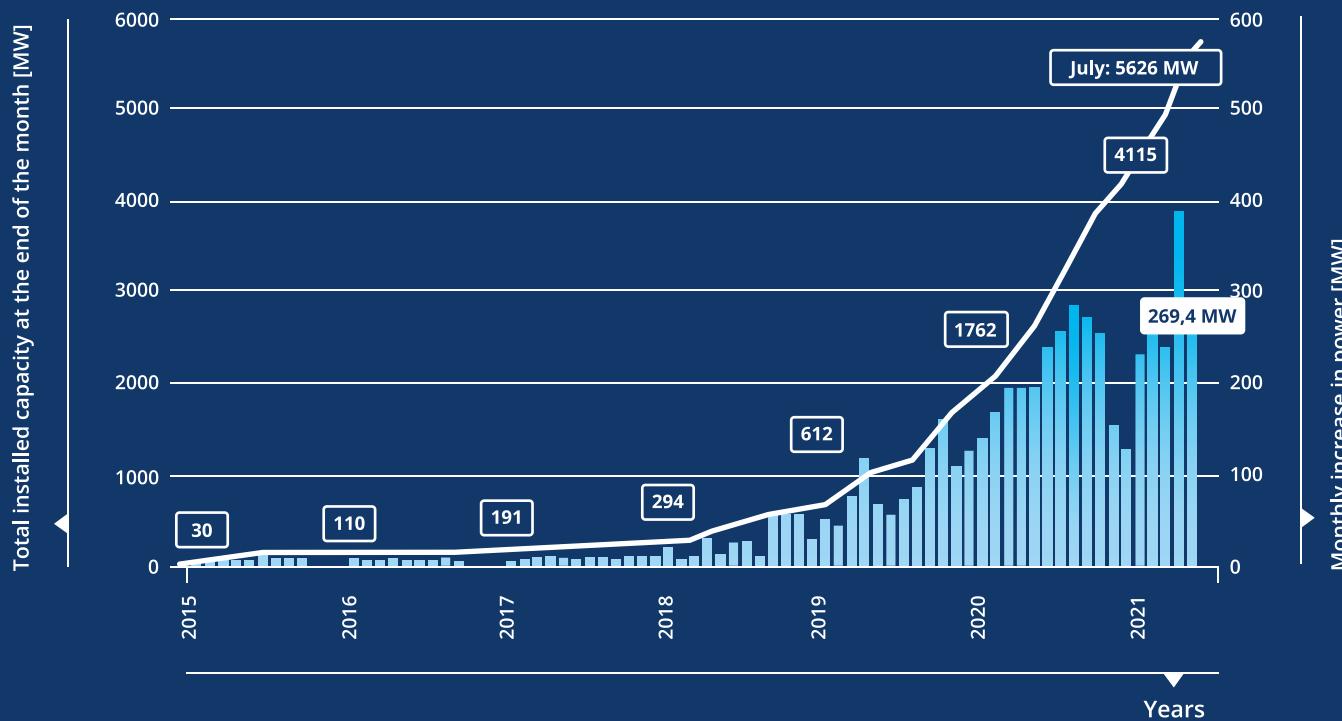
In recent years, there has been a problem with the excess of electricity produced, which forces search for optimal solutions for its storage.

Potential of alternative energy sources

Flexible solutions

Power of photovoltaic power plants in Poland in 2015-2021

Data: ARE | October 2021



Including PV prosumer plants in July 2021:

- 631.2 thousand pieces
- 4198 MW of power
- 3% share in domestic electricity production

Innovative ICE ON Ice Thermal Storage are perfect solution for existing one the need to store excess of energy. They enable lower operating costs cooling systems by 30% even without the use of renewable energy due to higher efficiency of cooling source due to lower temperature of the outside air.

Use of a 2 or 3-zone tariff in billing with electricity supplier results in further significant savings in operating costs of HVAC systems.

Let's switch to producing cooling energy at night

Flexible solutions



Lower electricity bills

Electricity prices have increased recently by over 400% and further increases are forecast. Therefore, it is worth investing in energy-saving technologies for producing cooling energy.

RES potential

The biggest advantage of cooling energy accumulation is possibility of using derived energy from alternative sources for cooling purposes at any time of the day.

More reliability

Thanks to accumulation of energy in the form of ice, we obtain greater reliability of cooling system. This is especially important for industrial sector.

Safe investment

Investment in innovative solution ICE ON Ice Thermal Storage is pure profit. The funds invested pay off in just a few years and then further savings are generated (30% annually).



Why is it worth investing in ICE ON Ice Thermal Storage?

- ✓ higher system efficiency => lower energy consumption => higher savings
- ✓ simple and reliable design of the device
- ✓ shorter working time => lower failure rate => higher reliability
- ✓ lower cubature required compared to chilled water buffer
- ✓ wide application flexibility => new and modernized systems
- ✓ possibility of obtaining funding from the EU funds
- ✓ real impact on reducing the greenhouse effect by reducing CO2 emissions





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know how solutions

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