



SMART Vari™
Optimized Air-Conditioning

PRECISION AND CLOSE CONTROL UNITS

A COMPLETE AND ENERGY-EFFICIENT
AIR-CONDITIONING SOLUTION

Smart Vari™ Precision and Close Control units for computer, electronics, measurement and testing spaces. Smart Vari™ technology will reduce energy consumption by 50% compared to the old technology.



SMART VARI™

A COMPLETE AND ENERGY-EFFICIENT
AIR-CONDITIONING SOLUTION

Chiller Oy is one of the leading system manufacturers of energy solutions in Europe. Design and services are based on the specific requirements of our clients. Together, we will find the best solutions for each case.

Chiller Oy was founded in 1990. The ownership of the company is entirely Finnish. As unit designer and manufacturer, we can offer a large range of technical services and solutions

The head office and factory are located in Tuusula, Finland. The office and production area is over of 5,000 m², and company employs over 100 people. Turnover for 2012 was almost 27 million euros.



DESIGN



PRODUCTION



SERVICE

Water products

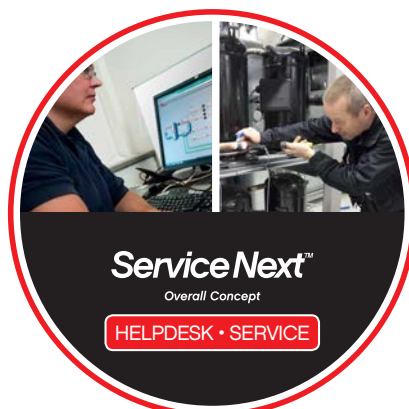
- ▶ Chilled water stations, water chillers and heat pumps.

Ceiling products

- ▶ Flat blower units, cassette fan coils and hotel convectors.

Cabinet products

- ▶ Close control units with different configurations.



SERVICE GROUP

Our service group offers the Help Desk and Internet-based monitoring and supervision concept **Service Next™**.



SMART VARI™ -SYSTEM SOLUTIONS

INNOVATIVE PRECISION AND CLOSE CONTROL
AIR-CONDITIONING TECHNOLOGY

SMART Vari™ solution provide the optimum Precision and Close Control air-conditioning. Units are optimized for either 7/12 °C or 10/18 °C cooling water temperature. The higher water temperature leads to a very low dehumidification process, and a substantial improvement in energy efficiency.

SMART Vari™ Precision and Close Control units are placed into the air-conditioned space or in its immediate vicinity. Units can be connected to Chiller Service Next™ maintenance and supervision system, which enables Help Desk to maintain and service them online.

SMART Vari™ units get the cold water for example from a Chilled Water Station Chillquick Eco™. These units are equipped with free cooling.

Smart Vari™ products run with EC fan motors which also reduce the energy consumption by 10 %. Radial fans based on EC technology enable to control the capacity very precisely. Dehumidification function is effective thanks to the intelligent fan speed control.

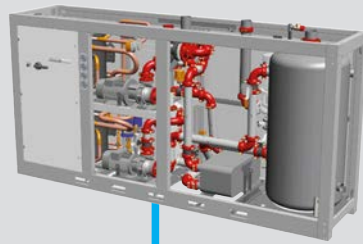
Optional water supplies



TWIN COOLING SYSTEM PROVIDES HIGH ENERGY EFFICIENCY!

Twin Cooling System (TCS) energy usage optimization

- ▶ SMART Vari™ can be connected into different cooling water supplies: a ground source, district cooling or a Chilled Water Station. One unit is the primary cooling water source, and others are used only as needed. SMART Vari™ TCS controls 3-way valves of the unit with a very high energy efficiency ratio!



Smart Vari™ unit



OPTION™

Reliable selections

- ▶ Unit selections can be made with advanced OPTION™ Selection Program.
- ▶ Read more: www.chiller.fi/en/option

The fan is placed in the unit in accordance to required airflow direction, and compressors with variable speed control to prevent unwanted dehumidification.

EXACT CONTROL

The best energy efficiency is achieved with downflow units (air direction), when the fan is located in the bottom part of the unit, below the raised floor level. SMART Vari™ product family is designed for a very high sensible cooling factor.

EMERGENCY COOLING SYSTEM (ECS)

Cooled water Precision and Close Control units can be delivered with an optional Emergency Cooling coil. For example, tap water can be used as cooling liquid.

Emergency Cooling System (ECS)

- ▶ One of the unit circuits is connected into the tap water supply and drainage. The units produce cooled air regardless of whether the primary cold water source is working or not. Smart Vari™ ECS connects the emergency cooling function mode automatically according to cooling needs. SMART Vari™ ECS solution guarantees 100 % reliable cooling!

SMART Vari™ control system

- ▶ SMART Vari™ control system guarantees the operation of all functions and ensures a correct and exact air and water flow for best possible cooling and energy efficiency. The control system also ensures the right temperature and humidity output with its modern component technology. All this with very high efficiency and low energy consumption!



SMART VARI™ S -SERIES

A NEW GENERATION OF PRECISION AIR-CONDITIONING
IN THE 3-15 KW CAPACITY RANGE (DX OR CHILLED WATER)



SMART™ Vari S -units are tailor made to the individual customer according to specification. They are particularly suitable for laboratories and similar challenging spaces where continuous and precise control is required.

SMART Vari™ S -units are available as direct expansion- and chilled water system. DX-units can be specified with inverter technology (as option). Smart Vari™ S -Precision Air-conditioning units with EC-fan motor technology can be adjusted steplessly between 0-100%.

AIR-TIGHT FRAME

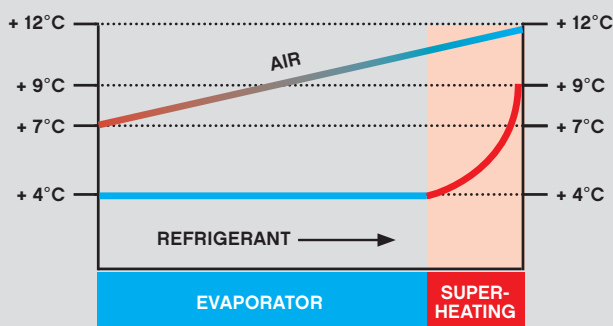
Tightness of the frame is important when avoiding loss in applications such as laboratories. The unit frame itself acts as a load-bearing structure, and provides an excellent seal.



SMART Vari™ S -SERIES

- ▶ Precision air-conditioning unit (for laboratories etc.)
- ▶ Tailor made in accordance to customer needs.
- ▶ Electronic expansion valve as a standard.
- ▶ Cooling capacity range 3–15 kW.
- ▶ DX or CW (chilled water) system.
- ▶ EC fan motor (variable airflow 0–100 %).
- ▶ Inverter compressor (variable speed).
- ▶ Many other options are available.

Principle of electronic expansion valve



OPTION™

Reliable selections

- ▶ Unit selections can be made with advanced **OPTION Selection Program**.
- ▶ Read more: www.chiller.fi/en/option



SMART Vari™ S -SERIES
DX • CW • 3–15 kW

This brings significant advantages compared to a structure where rubber seals are attached to body panels.

ELECTRONIC EXPANSION VALVE

The electronic expansion valve allows use of DC-compressor technologies. Valve control is based on constant pressure, instead of standard superheating. The electronic expansion valve saves energy approximately 10% com-

pared to a mechanical expansion valve. Condensing pressure can be reduced continuously and, correspondingly, the compressor runs with optional rpm.

CONDENSATION DRAIN PAN

The condensation drain pan is made of stainless steel. It prevents rust in the airflow during the non-condensing period of the year.



SMART VARI™ L -SERIES

TECHNICALLY ADVANCED CLOSE CONTROL UNITS
IN CAPACITY RANGE 15–130 KW (CHILLED WATER)



SMART™ Vari L -units are typically used in computer rooms and in facilities with significant latent heat load. Smart Vari™ L -series are manufactured with either direct expansion or chilled water system.

SMART Vari™ L -Close Control units are designed for facilities with a significant latent heat load and a need for cooling, humidification and dehumidification. DX- units are available with inverter technology (optional). SMART Vari™ L -Close Control units EC-fan motor speed varies steplessly between 0-100%.





SMART Vari™ L -SERIES

- ▶ Close Control air-conditioning unit (for archives, factories, data rooms etc.).
- ▶ Cooling capacity range 15–130 kW DX or CW (chilled water) system.
- ▶ Coil optimized for water temp. 7/12 °C (chilled water units).
- ▶ EC fan motor (variable airflow) Inverter compressor (variable speed).
- ▶ Twin Cooling System (TCS) (unit with 2 water circuits)
- ▶ Emergency Cooling System (ECS) (unit with “City water” circuit).
- ▶ Free cooling option.
- ▶ Many other options are available.

OPTION™

Reliable selections

- ▶ Unit selections can be made with advanced **OPTION Selection Program**.
- ▶ Read more: www.chiller.fi/en/option



SMART Vari™ L -SERIES CW • 15–130 kW

TWIN COOLING SYSTEM (TCS) ENERGY USAGE OPTIMIZATION!

SMART Vari™ L -chilled water units are optimized to water temperatures 7 °C inlet and 12 °C outlet. The L-series units can be connected to two separate water circuits so that cooling is always secured 24/7.

EMERGENCY COOLING SYSTEM (ECS) 100 % RELIABLE COOLING!

SMART Vari™ L -series units are available with ECS-option which allows connection of an extra water circuit, for example tap water as inlet, and outlet into drainage. SMART Vari™ ECS-solution guarantees 100 % reliable cooling!



SMART VARI™ XL -SERIES

STABLE AIR-CONDITIONING TO
PRODUCTION FACILITIES AND DATA ROOM SPACES
IN CAPACITY RANGE 20–200 KW (CHILLED WATER)



*Implementation of higher than typical cooling water temperature has been taken into account by design in the **SMART Vari™ XL** -units.*





SMART Vari™ XL -SERIES

- ▶ For data rooms etc.
- ▶ Cooling capacity range 20–200 kW.
- ▶ CW-system (chilled water).
- ▶ Coil optimized for water temp. 10/18 °C.
- ▶ EC-fan motor (variable airflow).
- ▶ Twin Cooling System (2-circuit water coil).
- ▶ Emergency Cooling System (coil with "Tap water" circuit).
- ▶ Many other options are available.

OPTION™

Reliable selections

- ▶ Unit selections can be made with advanced **OPTION Selection Program**.
- ▶ Read more: www.chiller.fi/en/option



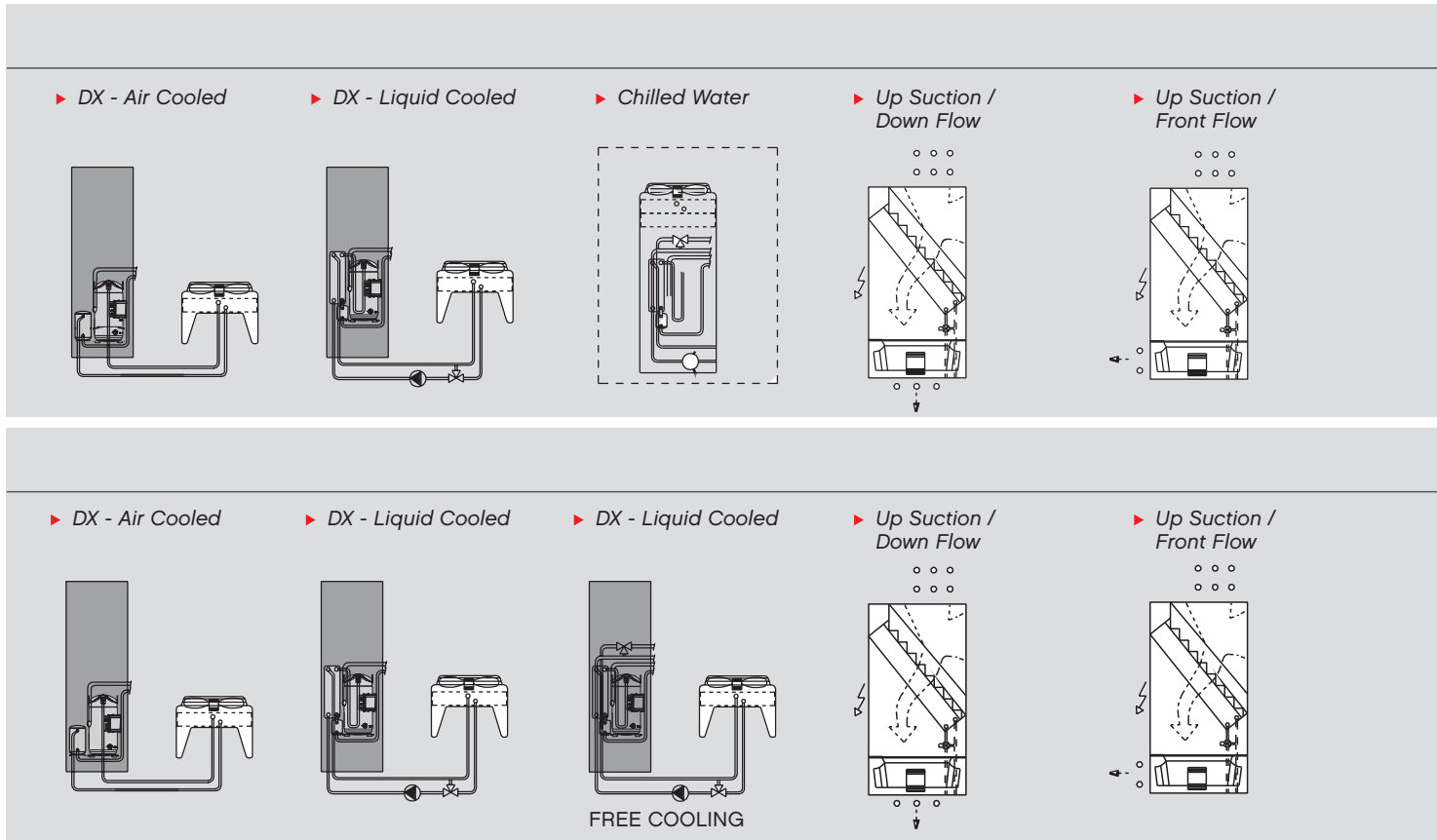
SMART Vari™ XL -SERIES CW • 20–200 kW

SMART Vari™ XL -series Close Control units are designed for production facilities, data centers, etc. where humidity load is very low. In these areas there is not generally a need for dehumidification. Units are mainly suited for district cooling as an example. SMART Vari™ XL -series is optimized to water temperatures of 10 °C inlet and 18 °C outlet.

EC-FAN MOTOR AND DUAL WATER CIRCUITS

SMART Vari™ units are equipped with EC-fan motors where

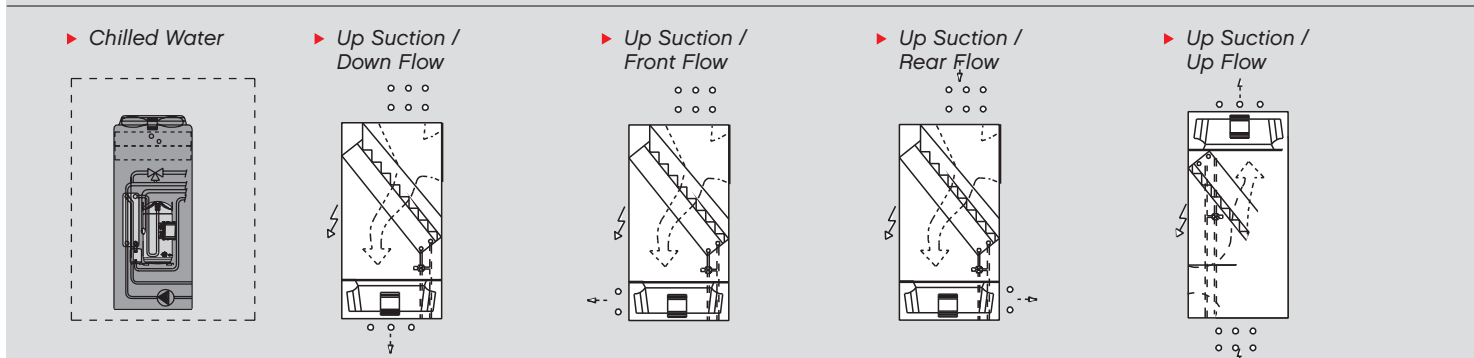
fan rotation speeds are adjusted steplessly between 0–100 %. SMART Vari™ XL -series units are also available with Twin Cooling System (TCS) to be connected with two separate water circuits (for example system of two separate chillers, chilling system with ground cool energy or free cooling). Also the Emergency Cooling System (ECS) enables unit connections into the tap water circuit (backup alternative).



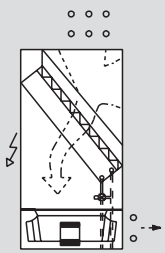
SMART VARITM™

- TAILOR MADE UNITS TO THE INDIVIDUAL CUSTOMER
ACCORDING TO SPECIFICATION

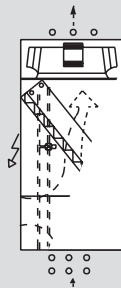
SMART Vari™ XL -SERIES [CW]



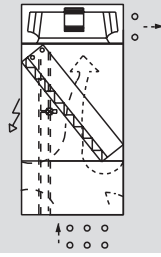
▶ Up Suction / Rear Flow



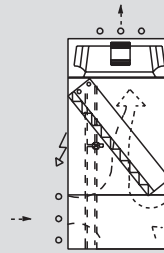
▶ Down Suction / Up Flow



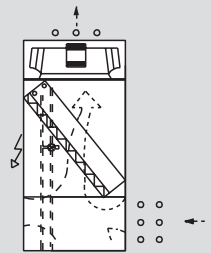
▶ Down Suction / Rear Flow



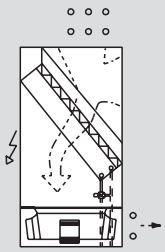
▶ Front Suction / Up Flow



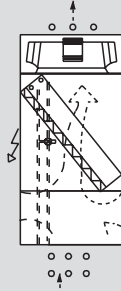
▶ Rear Suction / Up Flow



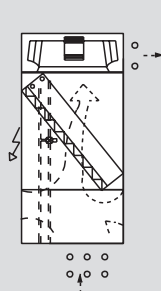
▶ Up Suction / Rear Flow



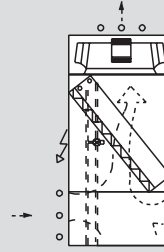
▶ Down Suction / Up Flow



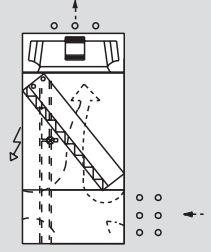
▶ Down Suction / Rear Flow



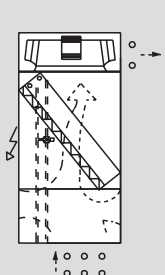
▶ Front Suction / Up Flow



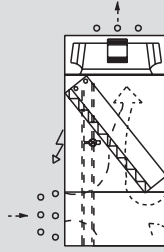
▶ Rear Suction / Up Flow



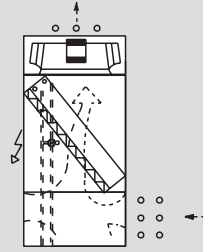
▶ Down Suction / Rear Flow



▶ Front Suction / Up Flow



▶ Rear Suction / Up Flow



▶ Down Suction / Front Flow





SMART VARI™ L-SERIES

TECHNICAL DATA (CW)

SMART Vari™ L · Chilled Water unit		40-1	60-1	75-1	80-2	100-2	130-2	150-2	160-3	180-3	210-3	240-3
Air Flow	[m³/h]	4000	6000	7500	8000	10000	13000	15000	16000	18000	21000	23000
	[m³/s]	1,11	1,67	2,08	2,22	2,78	3,61	4,17	4,44	5,00	5,83	6,39
Total cooling cap. (7/12 °C)*	[kW]	24,6	33,3	38,7	50,4	59,7	73,4	80,9	92,4	100,6	112,2	123,7
Sensible cooling cap.(7/12 °C)*	[kW]	18,7	25,8	30,4	37,9	45,4	55,7	62,6	70,7	77,5	87,2	95,7
EER	[Value]	79,1	51,7	31,7	81,0	64,9	48,2	36,8	56,0	50,7	41,2	38,4
Water Flow	[l/s]	1,18	1,59	1,85	2,41	2,86	3,51	3,87	4,42	4,81	5,37	5,92
Total pressure drop water side	[kPa]	36,6	65,0	67,1	49,9	69,0	76,1	114,1	66,8	78,6	96,8	118,6
Fan motor type	[Type]	EC	EC	EC	EC	EC	EC	EC	EC	EC	EC	EC
Number of fan	[pcs.]	1	1	1	2	2	2	2	3	3	3	3
External air pressure	[Pa]	50	50	50	50	50	50	50	50	50	50	50
Absorbed Power	[kW]	0,31	0,64	1,22	0,62	0,92	1,52	2,20	1,65	1,98	2,72	3,22
Absorbed current	[A]	0,34	0,88	1,83	0,66	1,13	2,16	3,28	2,13	2,69	3,93	4,74
Filtration class	[Class]	G4	G4	G4	G4	G4	G4	G4	G4	G4	G4	G4
Sound pressure level**	[dBA]	48,3	57,4	63,8	51,3	56,3	62,2	66,8	59,6	62,2	65,6	68,6
Humidifier/After heating												
Effective cap.	[kg/h]	5	5	5	8	8	8	8	15	15	15	15
Absorbed Power	[kW]	3,71	3,71	3,71	5,94	5,94	5,94	5,94	11,14	11,14	11,14	11,14
Electrical heaters	[pcs.]	2	2	2	4	4	4	4	6	6	6	6
Total heating capacity	[kW]	5,4	5,4	5,4	10,8	10,8	10,8	10,8	16,2	16,2	16,2	16,2
Height	[mm]	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980
Lenght	[mm]	1110	1110	1110	1895	1895	1895	1895	2680	2680	2680	2680
Depth	[mm]	850	850	850	850	850	850	850	850	850	850	850
Total electric data												
Electrical connections	[V -Ph-Hz]	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50
Cooling	[kW]	2,0	2,0	2,0	3,9	3,9	3,9	3,9	5,9	5,9	5,9	5,9
	[A]	3,0	3,0	3,0	6,0	6,0	6,0	6,0	9,0	9,0	9,0	9,0
Cooling+Heating	[kW]	7,4	7,4	7,4	14,7	14,7	14,7	14,7	22,1	22,1	22,1	22,1
	[A]	10,8	10,8	10,8	21,6	21,6	21,6	21,6	32,4	32,4	32,4	32,4
Cooling+Humidification	[kW]	5,7	5,7	5,7	9,9	9,9	9,9	9,9	17,0	17,0	17,0	17,0
	[A]	8,4	8,4	8,4	14,6	14,6	14,6	14,6	25,1	25,1	25,1	25,1
Cooling+Heat.+Humid.	[kW]	11,1	11,1	11,1	20,7	20,7	20,7	20,7	33,2	33,2	33,2	33,2
	[A]	16,2	16,2	16,2	30,2	30,2	30,2	30,2	48,5	48,5	48,5	48,5

*Water 7 °C inlet, 12° C outlet / room cond. 24 °C RH 50%

**Free field, 3 m distance





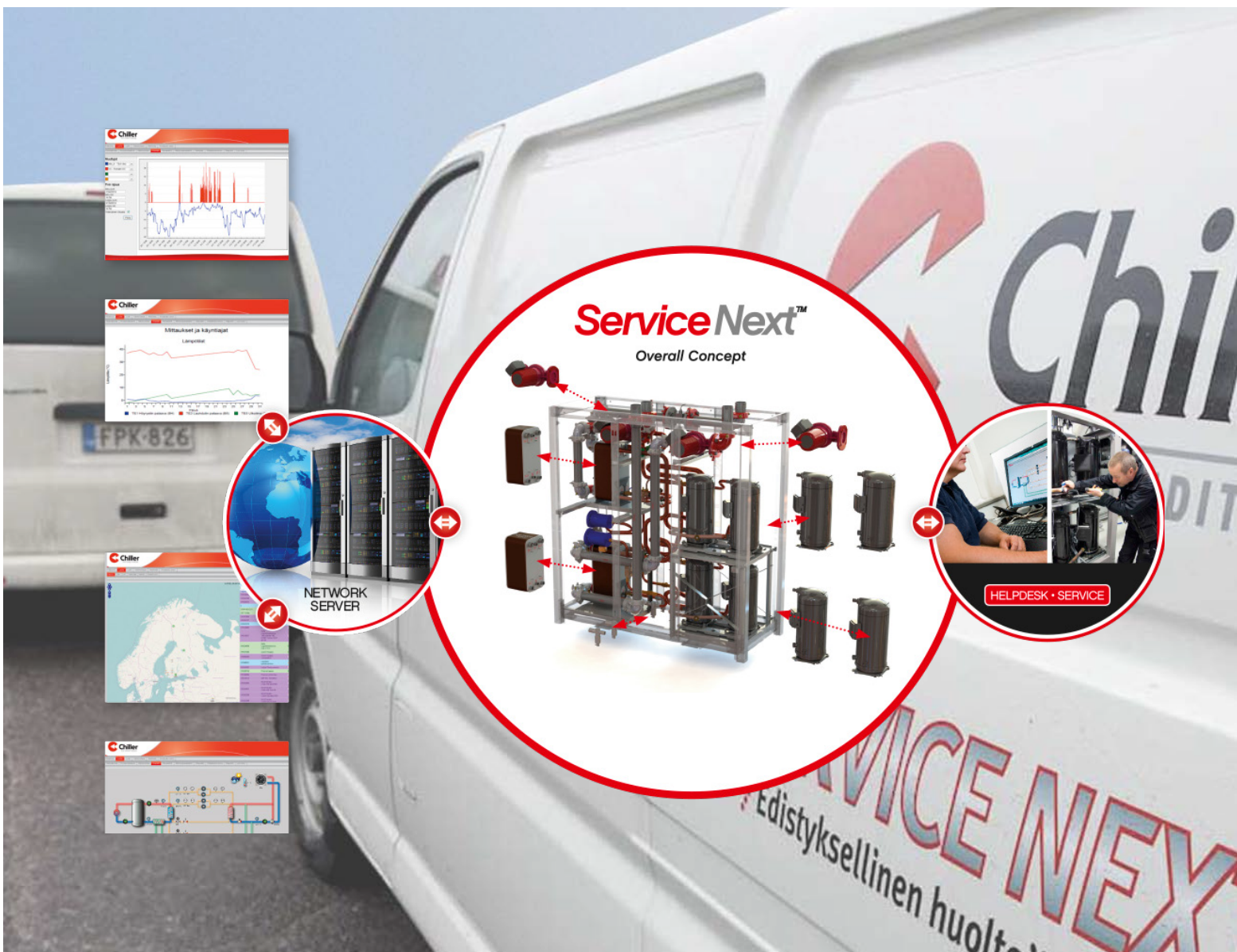
SMART VARI™ XL-SERIES

TECHNICAL DATA (CW)

SMART VARI™ XL - Chilled Water unit		40-1	80-1	100-1	100-2	120-2	160-2	200-2	200-3	220-3	260-3	300-3
Air Flow	[m³/h]	4000	8000	10000	10000	12000	16000	20000	20000	22000	26000	30000
	[m³/s]	1,11	2,22	2,78	2,78	3,33	4,44	5,56	5,56	6,11	7,22	8,33
Total cooling cap. (10/18 °C)*	[kW]	21,3	27,4	33,0	39,1	45,1	57,3	68,62	74,04	80,2	91,9	103,0
Sensible cooling cap. (10/18 °C)*	[kW]	21,3	27,4	33,0	38,2	44,9	57,3	68,6	74,0	80,2	91,9	103,0
EER	[Value]	93,1	28,2	18,2	62,5	48,0	29,7	19,3	43,1	34,0	26,9	19,0
Water Flow	[l/s]	0,64	0,82	0,99	1,17	1,35	1,71	2,05	2,21	2,40	2,75	3,08
Total pressure drop water side	[KPa]	9,9	15,8	17,5	17,9	23,4	22,5	23,3	21,8	25,3	32,7	33,6
Fan motor type	[Type]	EC	EC	EC	EC	EC	EC	EC	EC	EC	EC	EC
Number of fan	[pcs.]	1	1	1	2	2	2	2	2	3	3	3
External air pressure	[Pa]	20	20	20	20	20	20	20	20	20	20	20
Absorbed Power	[kW]	0,23	0,97	1,81	0,63	0,94	1,93	3,56	1,72	2,36	3,42	5,43
Absorbed current	[A]	0,35	1,50	2,78	0,96	1,45	2,96	5,47	2,64	3,62	5,26	8,35
Filtration	[Class]	G4	G4	G4	G4	G4	G4	G4	G4	G4	G4	G4
Sound pressure level**	[dBA]	50,1	64	69,6	57,8	61,6	67,9	72,7	64,7	67,9	71,6	74,5
Humidifier/After heating												
Effective cap.	[kg/h]	5	5	5	8	8	8	8	15	15	15	15
Absorbed Power	[kW]	3,71	3,71	3,71	5,94	5,94	5,94	5,94	11,14	11,14	11,14	11,14
Electrical heaters	[pcs.]	2	2	2	4	4	4	4	6	6	6	6
Total heating capacity	[kW]	5,4	5,4	5,4	10,8	10,8	10,8	10,8	16,2	16,2	16,2	16,2
Height	[mm]	1950+550	1950+550	1950+550	1950+550	1950+550	1950+550	1950+550	1950+550	1950+550	1950+550	1950+550
Lenght	[mm]	1110	1110	1110	1895	1895	1895	1895	2680	2680	2680	2680
Depth	[mm]	850	850	850	850	850	850	850	850	850	850	850
Total electric data												
Electrical connections	[V-Ph-Hz]	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50
Cooling	[kW]	2,68	2,68	2,68	5,36	5,36	5,36	5,36	8,04	8,04	8,04	8,04
	[A]	4,18	4,18	4,18	8,36	8,36	8,36	8,36	12,54	12,54	12,54	12,54
Cooling+Heating	[kW]	8,08	8,08	8,08	16,16	16,16	16,16	16,16	24,24	24,24	24,24	24,24
	[A]	11,98	11,98	11,98	23,97	23,97	23,97	23,97	35,95	35,95	35,95	35,95
Cooling+Humidification	[kW]	6,39	6,39	6,39	11,30	11,30	11,30	11,30	19,18	19,18	19,18	19,18
	[A]	9,55	9,55	9,55	16,95	16,95	16,95	16,95	28,64	28,64	28,64	28,64
Cooling+Heat.+Humid.	[kW]	11,79	11,79	11,79	22,10	22,10	22,10	22,10	35,38	35,38	35,38	35,38
	[A]	17,35	17,35	17,35	32,55	32,55	32,55	32,55	52,05	52,05	52,05	52,05

*Water 10 °C inlet, 18 °C outlet / room cond. 24 °C RH 50%

**Free field, 3 m distance



SERVICE NETXT™ -OVERALL CONCEPT

FOR MONITORING OPTIMIZATION AND COST-EFFICIENCY

Service Next™

Overall Concept

The Service Next™ overall concept provides reliable supervision and control to avoid malfunction and optimise the unit's coefficient of performance. It analyses hundreds of parameters to help user to forecast e.g. the need of service. This is the most efficient way to save the costs!



BOX Vari



GRAND Vari

- cassettes and fancoils
for the indoor
climate solutions



- Three-in- one
room controllers

VariPRO



Chillquick Thermo

- heat pumps
for the needs of processes and buildings



GROUP Controller

- for controlling
groups of units



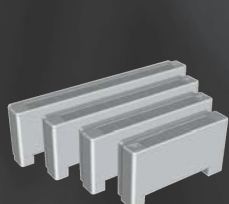
Chillquick Chillquick Eco Chillquick Light

- water chillers and cold water stations
for the needs of processes and buildings



COP Tronic KIO Tronic

- for monitoring
the coefficient of
performance and
leak of refrigerant



Studio Vari

- fancoils
for the indoor climate solutions



GIANT Vari



SMART Vari

- precision air-conditioners
for efficient cooling of computer and data rooms

FOR COMPREHENSIVE LIFE CYCLE MANAGEMENT AND OPTIMIZATION.

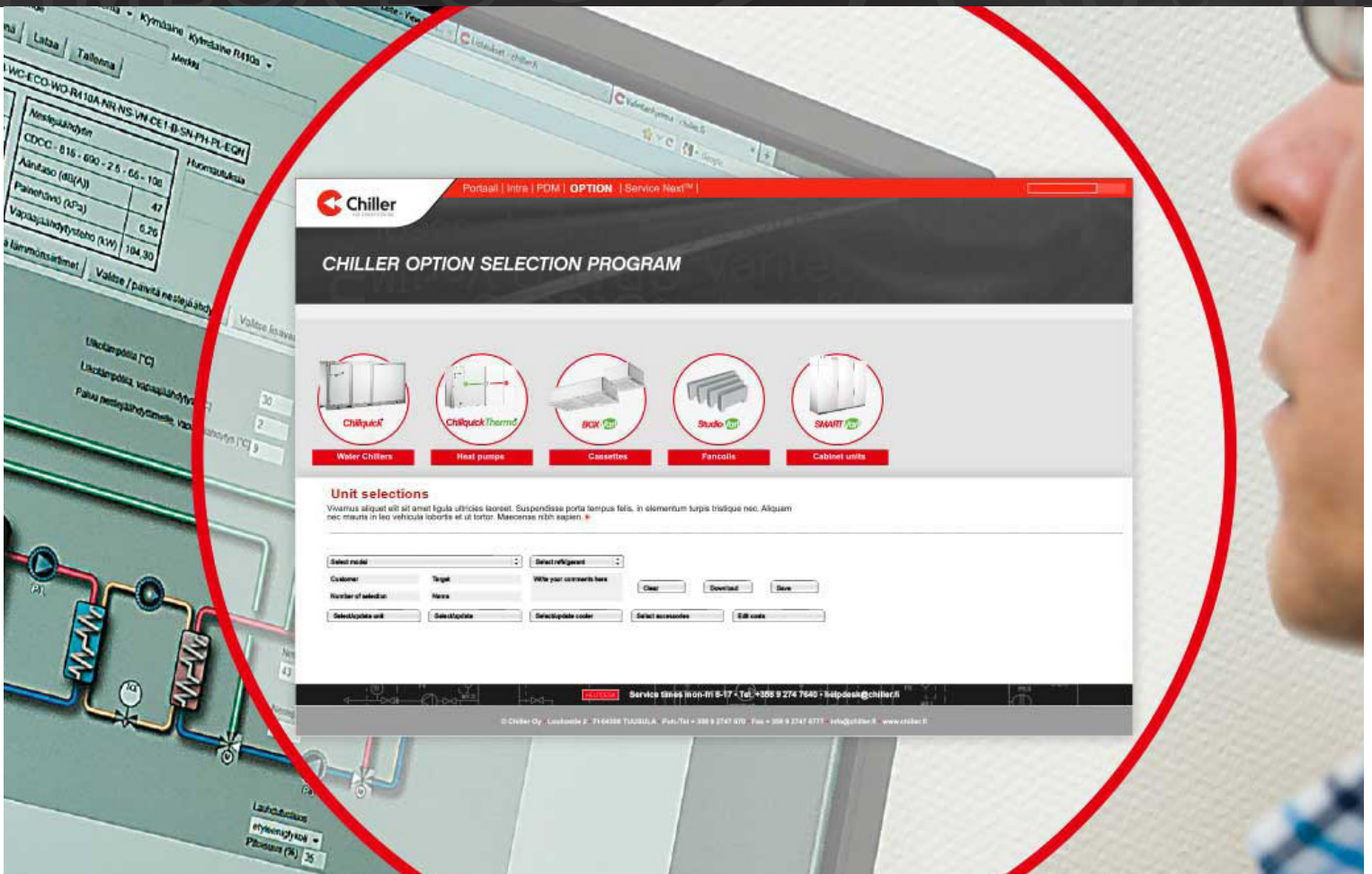
▶ READ MORE: www.chiller.fi/en/servicenext

Chiller Oy offers the Service Next™ overall concept free of charge for two years. The end user only has to provide an Internet connection to the unit without any extra equipment or software. The operative technical support - **Help Desk** - belongs to the service, there is no need for guesswork at site.

Service Next™ provides reports of energy consumption, alarms, refrigerant leaks and utilization rates.

All events, regulations and disorders will be stored in the systems database. Knowledge about those factors allows the life cycle control and optimization. Savings can be reached only by measuring, analysing and supervision.

OPTION™-SELECTION PROGRAM FOR EFFECTIVE UNIT SELECTIONS



Option™-selection program is Chiller's tool for selecting the best units. It allows the exact dimensioning of cooling and heating units and optional modules. The programme provides project-specific documents, diagrams, electrical and dimensional drawings.

BENEFITS OF OPTION

- ▶ The programme serves the planners and HEVAC-consultants purposes and speed up projects.
- ▶ Speed of delivery: the sales department is able to transfer the data to offer calculation and further to production.
- ▶ Part of Chiller customer portal.
- ▶ Read more: www.chiller.fi/en/option

WHY TO CHOOSE A CHILLER SOLUTION?



WATER PRODUCTS



CEILING PRODUCTS



CABINET PRODUCTS

Chiller Oy aims to provide a solution to its customers. **We solve** the problem with our various selection tools. **We deliver** optimal units and service for the customer. **We maintain** the facility with a reliable service system.

HEVAC CONSULTANT

For consultants, we offer a tool for easy and quick dimensioning of our units. The high efficiency and low maintenance costs provide designers with a security of the choices made.

CONTRACTOR

We supply cost-effective solutions for the contractor. Our units are compact and includes all of the features for customer need. Made at factory, not on site! We supply a factory tested and cost-effective solution!

SERVICE COMPANY

For service companies, we offer the **Service Next™ overall concept** for servicing and monitoring purposes. The system can be used to control service measures on the basis of telemetry data from the unit.

END USER

The greatest reward for Chiller Oy are satisfied end users. The end users appreciates managed indoor climate and low maintenance costs. Units and services are designed on the basis of this principle.

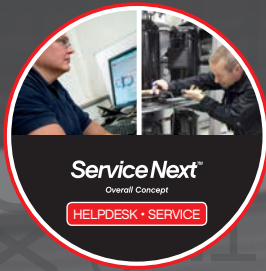
The life cycle of the units must be 15–20 years, and that can only be achieved by using high-quality components. The meaning of the purchasing price is very small compared to life cycle costs.

OPTION™

Reliable selections

Service Next™

Overall Concept



OUR SALES AND MAINTENANCE NETWORK AT YOUR SERVICE

Chiller Oy is one of Europe's leading manufacturers of energy-efficient and optimized air conditioning solutions. Design and service are always based on the customers' specific requirements. For more information, please contact our head office or foreign business partners.

► **Read more:** www.chiller.fi/en

Finland - Head office

Chiller Oy
Louhostie 2
FI-04300 Tusby
Finland

Tel. + 358 9 2747 670
info@chiller.fi
www.chiller.fi

Finnish daughter companies

Chiller Oy Jyväskylä
Chiller Oy Kuopio
Chiller Oy Lahti
Chiller Oy Oulu
Chiller Oy Tampere
Chiller Oy Turku

Dubai

**Chiller Air Conditioning
Solutions LLC**
P.O. Box 282071, Dubai
United Arab Emirates
Tel. 04 315 2397

Estonia

Chiller Estonia
ain.kuus@chiller.fi

Hong Kong

Eco Living Limited
Unit G, 1/F., Kam Po Court
No.2 Hoi Pong Square
Sai Kung, N.T.
Hongkong

Lithuania

UAB Leslat
Kaunas
leslat@takas.lt
www.leslat.lt

Norway

Chiller Norge AS
Oslo
Tel. +47 95 86 89 18
info@chillernorge.no
www.chillernorge.no

Poland

StepSystems Sp. z o.o.
Radom
biuro@stepsystems.pl
www.stepsystems.pl

Sweden

Chiller Sverige AB
Stockholm
Tel. +46 8 54 50 2080
info@chillersverige.se
www.chillersverige.se

Forsberg & Tibell Kyl AB

Jönköping
Tel. +46 36 132 650
info@kyla.nu
www.kyla.nu



ServiceNext
Overall Concept