ClimaCheck Sweden AB



REDUCED ENVIRONMENTAL IMPACT





ClimaCheck Sweden AB www.climacheck.com

The food sector - from manufacturing to supermarket

Companies working with frozen or chilled food have the opportunity to drastically reduce the costs for energy and service by ensuring optimum operation of their cooling and freezing equipment.

By using the unique technique which has been developed by ClimaCheck , detailed data about how your equipment operates is presented. In addition, it will reduce the risk of operational interruptions with costs of destroyed food and unhappy customers as a result.



ClimaCheck

Equipment for analysing performance of cooling and heat pump systems





Applications ClimaCheck

- Manufacturing-Development and testing.
- Commissioning of cooling and heat pump systems.
- Performance analysing-optimisation.
- Inspections
- Preemptive maintance.
- Trouble shooting.
- Basis energy saving measures
- Surveillance:

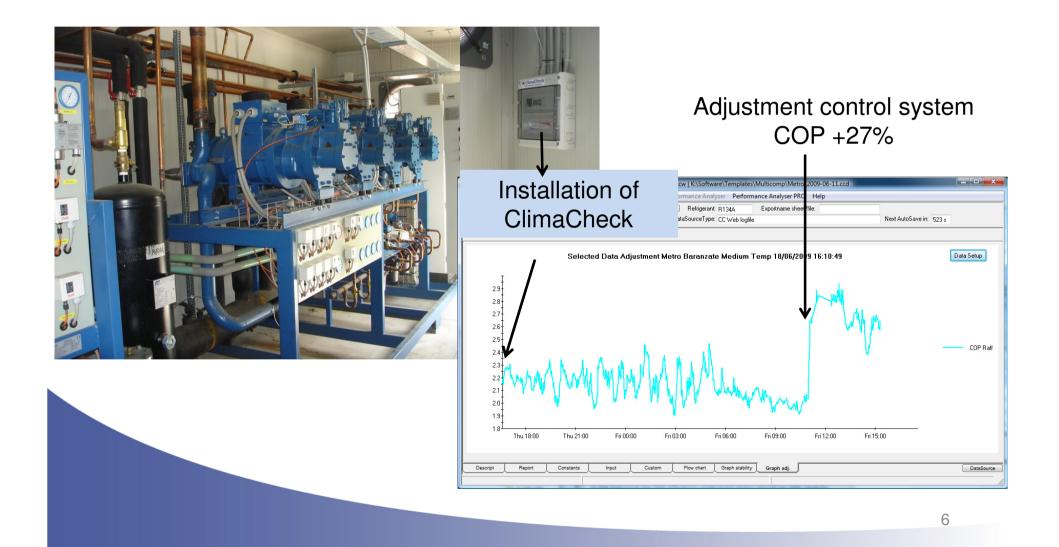
Indication of upcoming problems and energy consumption statistics.

The food sector - from manufacturing to supermarket

With ClimaCheck's solution you get unbiased data to make the proper decisions in terms of service, unused capacity for additional storage of food and if the equipment is operating according to the specifications.



Italian Supermarket - Metro Baranzate in Milan Savings: 16 000 Euro per år.



Energy optimisation project- Carrefour in Italy

- Measures taken
 - Adjustments on the control system
 - Optimisation of set points (evaporating temp, time constants and hysteresis)
 - Fan control
 - Cleaning of condensers with high temperature differences
 - Adjustments on poorly operating economiser systems
 - Measures taken on 10 compressors (out of 90) with low efficiency to avoid compressor failure and high costs

Energy saving between 7-13 % on total bought electricity to the supermarket

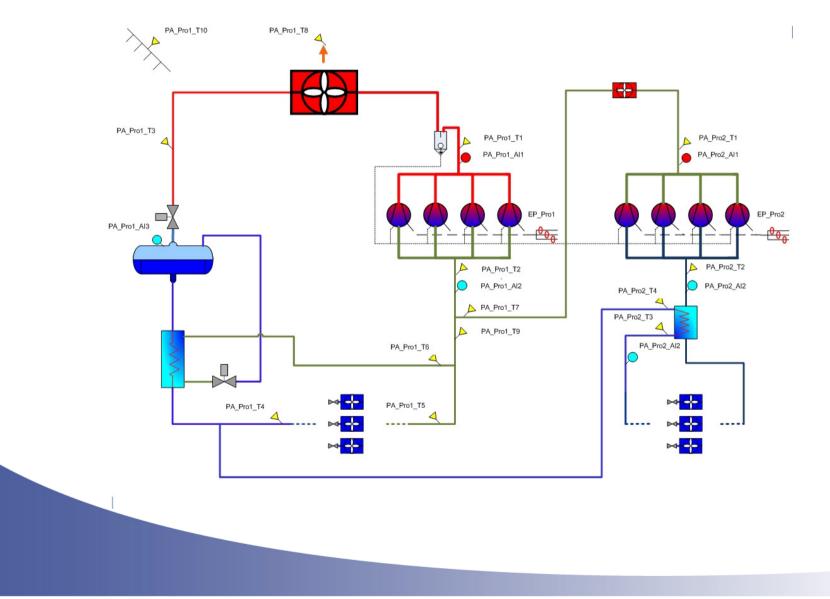
Performance improvement > 20-30%



Complete documentation to analyse components

| | B21 B | D | F | F | G | N | 0 | P | 0 | T II | V | W | AC | AD | AE | AF | AM | AZ | BA | BE | BG | BL | BM | B/W/ | BX | BY |
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| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Refriger | ant | R134A | | | | | | | | | | | | | | | Term. eff. | eff. | Stab COP | Accept Stab | Auto | | | | |
| | 7 | | | | | | | | | 122 | | | | | 1.19 | | | 0.93 | 1.00 | 0.08 | 0.02 | 0.00 | | | | |
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| 14 | | Evap. Sec. Low Pres. | | | es. Ref Cond. See | | | | | iec. | c. High Pressure Ref. | | | | | Compress | | ressor | ər | | | | Electrical | | | |
| 17 | | | 25.1 | 22.4 | 3.21 | 10.5 | 23.6 | 19.8 | <u>9.3</u> | 48.0 | 57.8 | 16.66 | 62.1 | | 51.3 | 10.8 | 86.0 | 65.7 | 31.9 | 2.94 | 94.1 | 3.90 | 124.5 | 53.8 | 53.2 | 58 |
| 19 | TITLET | | 25.2 | 22.5 | 3.23 | 10.7 | 23.6 | 19.8 | <u>9.3</u> | 48.3 | 57.8 | 16.70 | 62.2 | | 51.4 | 10.9 | 86.2 | 66.1 | 32.1 | 2.96 | 94.5 | 3.91 | 124.9 | 53.9 | 53.3 | 58 |
| - 20 | Date | | | 22.3 | 3.20 | 10.5 | 23.5 | 19.8 | <u>9.1</u> | 47.6 | 57.7 | 16.63 | 62.0 | | 51.2 | <u>10.7</u> | 85.9 | 65.2 | 31.9 | 2.93 | 93.6 | 3.88 | 124.0 | 53.6 | 53.1 | 57 |
| | Date | Time | SecC Evap in | SecC Evap ou | | Ref Evap Midpoint | Ref. Evap. | Ref Comp | Super heat | SecW | SecW | | Ref | Ref | Ref | Sub | Ref | Comp | Power | COP | Cap. | COP | Cap. Heat | Comp1 | Comp1 | Cor |
| 21 | 112 124 | 1-181 | (°°) | (°C) | (Bar(g)) | (°C) | out | in | (K) | Cond in (°C) | Cond out | press. (Bar(g)) | Cond Mid point | After | Exp. Valve | cool total | Comp out | Isen. | input | Cool | Cool | Heat | (kW) | Amps | Amps | Ar |
| | | Sec. 10 | | | | | (°C) | (°C) | | | (°C) | C Carr | (°C) | (°C) | în | (K) | (°C) | eff** (%) | Comp. (kW) | | (kW) | | | L1 (A) | 12 | 1 |
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| Descri | Re | port | Constants | | nput | Eva | poratir | g SST | | | 10. | | the second second second | | | Power in | 100 200 | | 31.8 | kW | 39 | 0.0 kW | | | | |
| - | | A setting the set | | | | | | ng SDT | | | - | 기고 | °C | | | Current | (400V) | | 63.0 | A | 74 | 1.2 A | | | | |
| | 🖬 Co., | - 🛃 P., | |)I | 7 3 c | 1 CON | | | | | 63 | | IC. | | | Voltage i | anne | | 200 | 400V | | 0-420V | | | | |

Complex installations requires measurements



9

AWARDS







ClimaCheck