



COOLSTAR

Module 13: Calculation of evaporators

This module enables you to design evaporators made by CONTARDO, ECO, GÜNTNER and ROLLER. The selection is made under consideration of construction type and rib distance. The calculation can be done following DTm or DT1.

Module 14: Calculation of piping for flooded pump operation

The calculation has the same functionality as module "5. Calculation of piping net" with the difference that only one evaporation temperature can be selected and the circulation factor and the pump pressure difference must be specified.

The pump flow and return lines are dimensioned according to the pipe network and the height difference between the cooling point and the separator. The return line can be divided into up to 3 partial lines at riser points. The boiling delay due to the pressure loss of the pipe network is determined at all cooling points. The valve stations for flow and return are designed for each cooling point. Up to 10 heat exchangers can be connected downstream of the valve stations.

Module 15: Flooded pump systems in the h log p diagram

Using this module, you can show the theoretical compression for pump refrigeration plants in a h log p diagram. Calculation can be made for any refrigerant without temperatur glide.

Module 16: H-X diagram (Mollier)

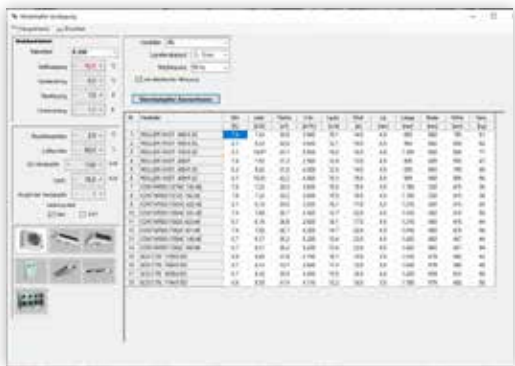
Pre-adjustments can be made in the following ranges:

- air pressure from 100 to 10,000 mbar
- temperature from -50 °C to -80 °C
- specific humidity from 0 to 250 g/kg

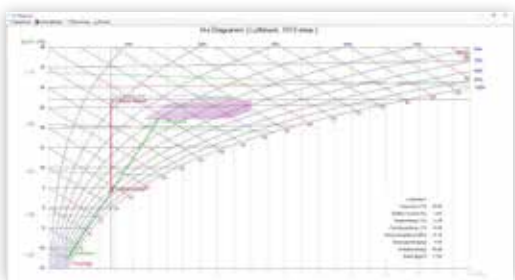
For every air condition, values for temperature, relative humidity, specific humidity, water vapour pressure, enthalpy and density, dew point and wetbulb temperature are shown. By entering two values, all other values are calculated. The module calculates the following changes of the air: heating, cooling, dehumidifying, humidifying with scrubber or steam and mixing. In all calculations the value to be calculated can be selected (air admittance and outlet, volume flow, or performances). Subsequent calculations can also be made. In this case, the air outlet value is taken as air admittance value of the subsequent calculation (e.g. mixing, heating, humidifying). The changes of state are displayed both in charts and tables.

Module 17: Transcritical process

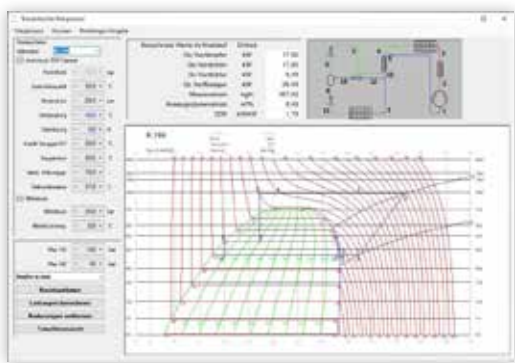
This module is designed for the use of R744 (CO₂), R23 and R170 only. The refrigeration circuit can be calculated for both subcritical and transcritical projects as well as with and without gas bypass. The concept may include an internal chiller and/or a gas cooler. The transcritical pressure can be calculated COP optimized. The piping net is designed considering maximum operating pressures.



Selection of evaporators



H-X diagram



Transcritical process

COOLSTAR – developed from refrigeration experts for refrigeration experts.

Manufacturer independent

COOLSTAR is a very flexible program. With the module master data you are able to adapt the calculations of COOLSTAR to your situation. You may – e.g. in the calculation of a piping net – put in your preferred manufacturers, so that the results of calculation only include these favourite components. Data of piping may be adapted to your requirements, so that only the diameters you use every day will be proposed.

Multilingual

COOLSTAR is offered in four languages: German, English, French and Dutch.

Easy

COOLSTAR is as simple as efficient. You will be a perfect user within a very short time. COOLSTAR is common-sense, user-friendly and interactive.

Flexible

COOLSTAR allows calculations in different units. In other words: the program is flexible to use.

Automatic data transfer

COOLSTAR allows calculations in different units. In other words: the program is flexible to use.

Variable output

COOLSTAR calculations can be output as PDF, XLS or WMF file.

Context-sensitive help

COOLSTAR offers a context-sensitive help system. You'll quickly find helpful information on your screen.

Database of components

With only one click you can open the product documentation of the component. So you get the necessary information for your application.

Always up to date

COOLSTAR allows alteration and adaptation of the included component databases. This means: your program will always be up to date.

Excellent price/performance ratio

For COOLSTAR you pay less than you expect!



COOLSTAR

The Refrigeration Software.

Easy. Quick. Precise.



Developed from
refrigeration experts
for refrigeration
experts





The Refrigeration Software.

Easy. Quick. Precise.



COOLSTAR – the comfortable calculation software for refrigeration and air-conditioning.

With COOLSTAR you'll get well-founded calculations for your refrigeration plants quickly and and very precisely. Almost all calculations are based on the thermodynamic equations of state for the refrigerants:

R12, R14, R22, R23, R32, R125, R134a, R170, R227ea, R290, R600, R600a, R717, R723, R744, R1150, R1224yd(Z), R1233zd(E), R1234yf, R1234ze(E), R1234ze(Z), R1270, R1336mzzZ

as well as for all common cooling mixtures from R401A to R472A and R502 to R516A.

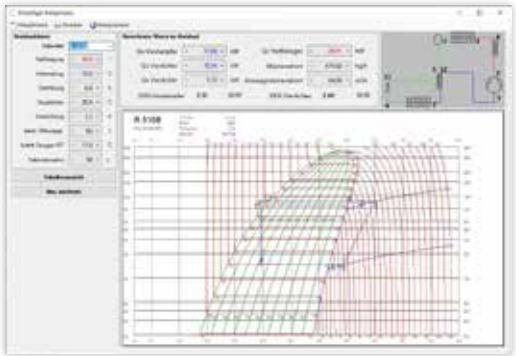
Module 01: Calculation with and without internal heat exchanger
All theoretic values of the single-stage compression will be calculated quickly and exactly. The refrigeration circuit can be calculated either with or without pressure drops. The calculated values will be shown graphically in a h log p diagram. The respective values of each point in the diagram will be shown in a table by a mouse click.

Module 02: Two-stage compression with open intermediate cooler in the h log p diagram
This module works with all refrigerants mentioned above. Additionally, you may select the intermediate pressure. In the h log p diagram, you may click on every point to get the exact values.

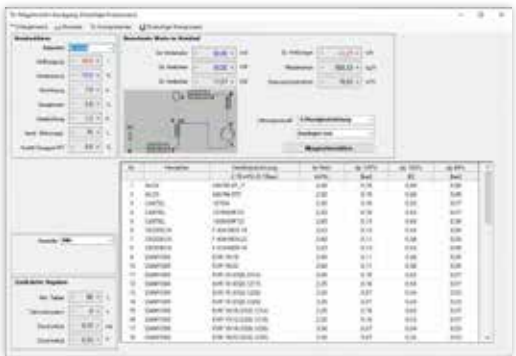
Module 03: Two-stage compression with intercooler in the h log p diagram
Calculation with all refrigerants is possible here, too; also with graphics of the circuit processes in a h log p diagram. A thermodynamic table is also offered.

Module 04: Calculation of piping
COOLSTAR provides you with all pipes of the calculated circuit processes. the geodetic height difference is evaluated as a pressure loss or pressure increase. When selecting the suction or discharge line, COOLSTAR automatically verifies if all conditions for a perfect oil transport are fulfilled. If necessary, tapering the lines will be proposed. Furthermore, double rising lines can be calculated. The operating points are displayed in an oil diagram for visual control. All lines can be changed manually by the user.

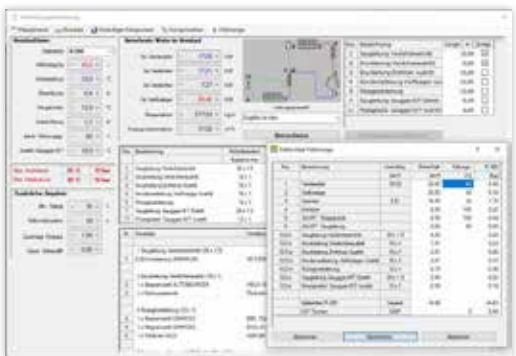
At the same time, all desired components such as shut-off, solenoid, non-return, expansion valve, dryer and sight glass are designed, and the insulation required to prevent the dew point being undershot is dimensioned. The calculation is rounded off by determining the refrigerant charge. The calculation results are clearly presented in tabular form.



Circuit processes



Selection of solenoid valves



Calculation of piping

Module 05: Calculation of piping net
This module has been developed especially for compound systems. Within a very short time you may design all refrigerant-containing pipings in compound systems with up to 100 cooling units and up to 20 compressors, even including the suitable solenoid, expansion and shut-off valves. The suction line can be calculated with two different evaporating temperatures especially for booster systems.

All other fittings for the compound (check valves, driers, sight glasses, etc.) are calculated as well. Selection and arrangement of the cooling units may be placed easily right on the screen by using the mouse. There is no rigid pattern. Like in the calculation of pipelines, rising lines are verified for a perfect oil transport and, if necessary, the lines are tapered or split. Both the number of existing or required compressors and the factor of simultaneousness can be selected.

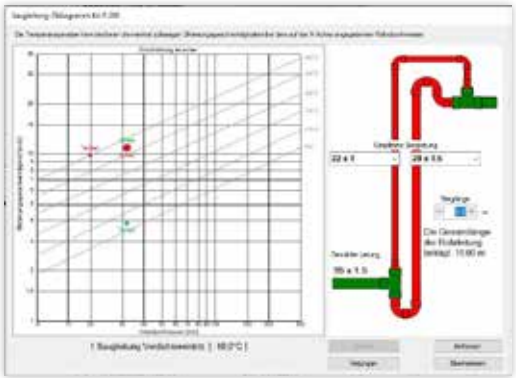
COOLSTAR draws up a list of material for the calculation, a list of piping for your fitters on the building site, a list of components for each cooling unit and a list of rising lines with the required double rising lines. Verifying calculations of existing piping nets are possible as well.

Module 06: Design of solenoid valves
COOLSTAR enables you to calculate solenoid valves of the manufacturers ALCO, CASTEL, CEODEUX, DANFOSS, EGELHOF, GSR, HONEYWELL, MOHRMANN, ODE, OFFENWANGER, PARKER and SPORLAN for liquid, suction gas and pressure gas lines. The valves will be selected covering the cv value and under consideration of the minimum pressure drop for servo-controlled valves. Besides it is also possible to recalculate existent valves.

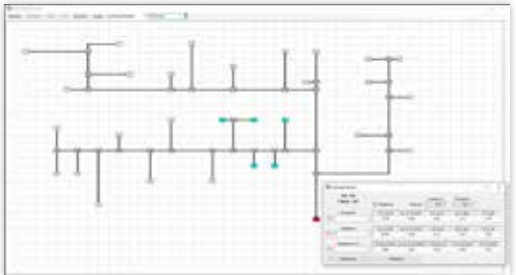
Module 07: Design of expansion valves
Products of the manufacturers ALCO, CAREL, DANFOSS, EGELHOF, HONEYWELL and SIEMENS have been included. COOLSTAR enables you to calculate the most common valves of the manufacturers mentioned above. Several electronic expansion valves can also be calculated.

Module 08: Design of check valves
This module includes products of ALTENBURGER, AWP, CARLY, CASTEL, DANFOSS, GMC, HENRY und HONEYWELL. Similar to expansion valves, check valves are selected covering the cv value and under consideration of the minimum pressure drop. Recalculation of existing valves is possible as well.

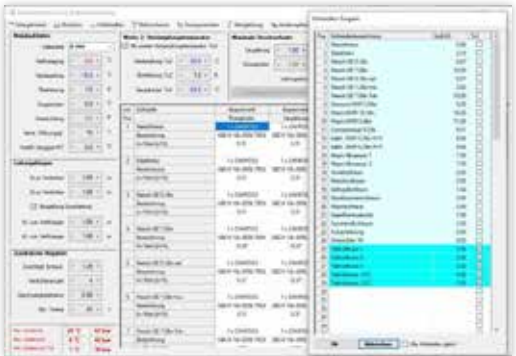
Module 09: Calculation of refrigerant compressors
With the help of this module, refrigerant compressors of BITZER and BOCK may be calculated. Usually, two compressors are proposed for selection, so that you may determine your suitable compressor easily and quickly.



Oil diagram



Piping net



Calculation of piping net

Module 10: Calculation of cold rooms
The calculation of cold rooms enables you to determine the required refrigerating capacity within a very short time. With this module, you can calculate coolers up to a dimension of 100m x 100m x 100m. COOLSTAR includes the data of about 150 different cooling goods, so that for almost any cooling good the required data may be recalled any time. A calculation with data of your own goods is also possible. The air change is calculated following the formula either of BÄCKSTRÖM or TAMM. Input of your own values is possible as well. When calculating the required refrigeration capacity, COOLSTAR automatically considers the effects of fan and defrost heater. There is no need for annoying calculations back to the effective hours of operation.

Module 11: Calculation of air-conditioning (heat load)
With this module, you may calculate the cooling load of air-conditioned rooms. Ground plans of any shape can be entered. The program considers the adaption of inside to fluctuating outside temperatures as well as outside air change rate, glazing, number of people and sun protection. For July and September, the development of thermal loads in the air-conditioned rooms is shown.

Module 12: Calculation of chilled-water net
COOLSTAR allows calculation of water nets with up to 100 cooling units, including the required components (shut-off valve, solenoid valve, check valve, circuit control valve, filter, two-way or three-way control valve).

COOLSTAR provides calculations with the specific data of the following refrigerants and brines:

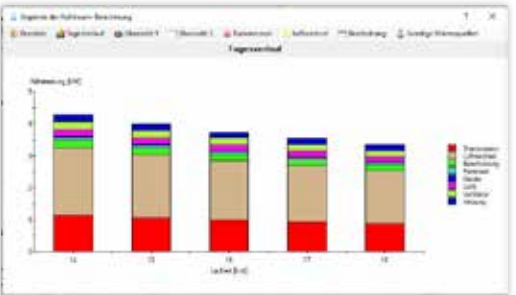
Water, Antifrogen N, Antifrogen L, Antifrogen KA, Antifrogen KF, Fragolthermöle, HYCOOL 20 bis 50, Freezium, Glykosol N, Pekasol L, Pekasol 2000, Syltherm XLT, Temper -10 bis -60, Therminol D12, Thermogen, Tyfocor, Tyfocor L, Tyfoxit, Tyfoxit F, Zitrec MC, Zitrec LC.

The module includes components by the following manufacturers: ARI, BELIMO, BELVEN, BENDER, CIRCOR RTK, DANFOSS, ESBE, GEORG FISCHER, HERZ, HONEYWELL, MEIBES, NICAB, OEVENTROP, PARKER, RAMSAYER, SAUTER, SIEMENS, TACO, andTICOM. Of course, you may enter you own data as well.

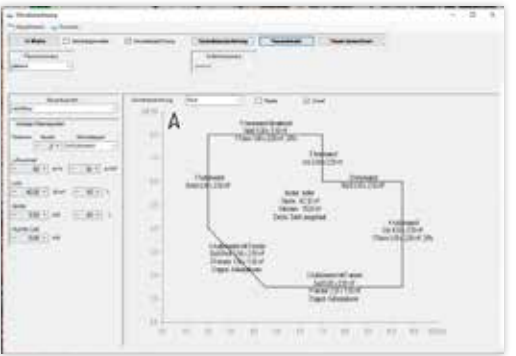
The piping net can be calculated with the help of pressure drop or of flow velocity. The loss of pressure of the respective heat-exchanger is also considered.

The calculation of the chilled-water receiver is made dynamically in dependence of the coolant volume in the piping net. The data of the required circulation pump are determined and all selected components of the heat exchangers are adjusted.

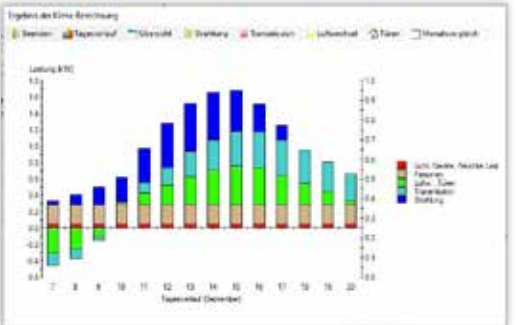
COOLSTAR calculates the insulation required to prevent falling below the dew point (AEROFLEX, ARMAFLEX, ISOPIPE, KAIFLEX, THERMAFLEX, and WÜHRT).



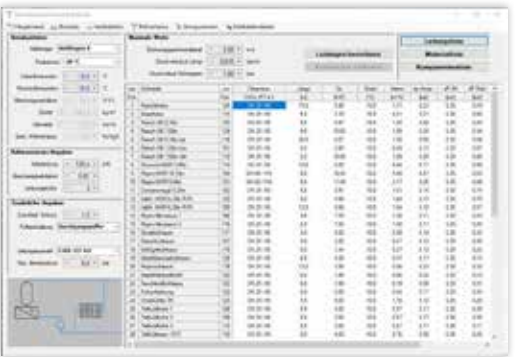
Calculation of cold rooms



Calculation of air-conditioning



Result of a calculation of air-conditioning



Chilled-water net