

Refra[®]
www.refra.eu

REFRIGERATION & AIR CONDITIONING

COMPRESSOR PACKS - CONDENSING UNITS - CHILLERS & HEAT PUMPS - AIR HEAT EXCHANGERS - BUFFER TANKS
& PRESSURE VESSELS - HYDRONIC MODULES - ICE BANKS - COLD ROOM DOORS - METAL SHOP - CONTROL BOX



Subcritical
=cascade



Satellites



Standard
compressor
pack



Cold room
doors



Ice banks



Air heat
exchangers



Buffer Tanks &
Pressure Vessels

COMPRESSOR RACKS

COLD ROOM DOORS

ICE BANKS

AIR HEAT EXCHANGERS

BUFFER TANKS & PRESSURE VESSELS

Refra

Sales support.

Our company is always interested in providing best sales conditions for all customers.

Before sales support.

Our software "Refra selection tool" helps our customers to select required equipment. Also our technical department helps to find best solutions for non standard requests.



B case



BM units



KF frame types



KW frame types



CONDENSING UNITS

CHILLERS & HEAT PUMPS



Air cooled chillers



Liquid cooled chillers



Condenser-less chillers

HYDRONIC MODULES



Hydronic modules



After sales support.

All our products equipped with guidelines of installation and service. Also we are always ready to provide additional information and recommendations to clarify the working process of our equipment free of charges. All our equipment has warranty as well.

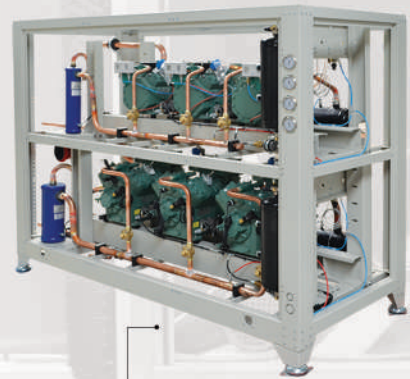
1 Compressor Racks



AU frame: welded frame, bended profile



AS frame – welded frame, standard profile



AR frame – assembled frame

Several Implemented Projects ▼

- 1 CO2 transcritical booster. LT stage 35kW – MT stage 107kW „RIMI“ Lithuania.



Overview

The compressor rack is the most important and complex device in the refrigeration system: this delivers cooling or heating to all the refrigeration utilities and the related processing rooms.

Correct selection of the compressor rack is the key to the high performance and cost savings.

Company REFRA manufactures different types of racks with wide range compressors, design and capacity range.

Refra compressor racks:

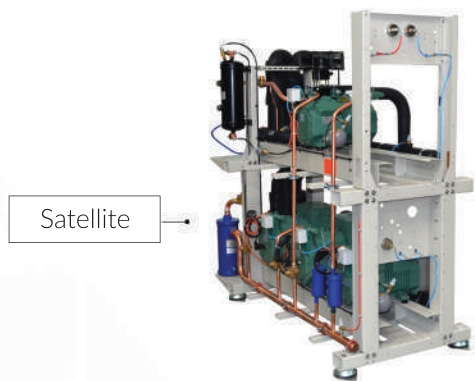
- ▶ Are available with most refrigerants, including natural refrigerants
- ▶ With different compressor types – scroll, reciprocating, screw
- ▶ Available frame materials are: galvanized or stainless steel



AB frame – assembled frame with covers



Transcritical CO2



Satellite



Subcritical = Cascade

2 CO2 transcritical booster. LT stage 55kW – MT stage 220kW „MAXIMA“ Estonia

3 Russia 2018. 550 kW compressor rack for supermarket



2 Condensing Units



Open type condensing units



Closed type condensing units

Several Implemented Projects ▼

- 1 Ireland 2017.
6x30 kW condensing units for farmacy industry



Overview

Company REFRA manufactures different types of air-cooled condensing units with different design and capacity range. Various unit types suitable for all kind outdoor applications can be chosen from our production range.

starting from small size commercial refrigeration units up to medium/big size commercial or industrial refrigerations systems (KW or KF models).

Refra condensing units:

- ▶ Available in 9 main series
- ▶ Available frame material: galvanized or stainless steel
- ▶ Can be delivered both – with axial EC or AC fans
- ▶ Can have different coil coating possibilities
- ▶ With different compressor types – scroll, reciprocating, screw



KW - Condensing units



KF - Condensing units

2 Denmark 2018.
2x125 kW propane chillers, master-slave operation



3 Martinique 2016.
3x120 kW condensing units for food industry



3 Chillers & Heat Pumps



Liquid cooled chillers



Condenser-less chillers



Several Implemented Projects ▼

- 1 Germany 2018. R290 1MW chiller for Suss Microtec factory air conditioning



Overview

Refra has various chiller and heat pump solutions – providing you with the flexible range water and air cooled chillers and heat pumps. We design every unit to meet your special demand – to cut operating cost and deliver environment-friendly unit. Our chillers and heat pumps are energy efficient and designed to fit almost all cooling and heating applications.

Refra chillers & heat pumps:

- ▶ Can be air, water cooled or condenser-less
- ▶ With different compressor types – scroll, reciprocating, screw
- ▶ Available frame materials: galvanized or stainless steel
- ▶ Can be delivered with plate and/or shell and tube heat exchangers
- ▶ Flooded system available
- ▶ Hydro module built in or delivered separately
- ▶ Integrated free cooling option



Heat pumps



Air cooled chiller

2

Lithuania 2018.
2x300 kW AC chillers for commercial building

3

Russia 2018
3x400kW chillers for open ice rink



4 Air Heat Exchangers



Overview

While working with equipment which needs an air cooling, Refra encountered a need to expand its production capabilities. We have developed full brand new production line of different purpose heat exchangers – from simple finned pack coil to various heat exchange units such as condensers, drycoolers, gascoolers and other. Modern technology and tools allows us to perfectly meet customer needs and offer competitive products with reasonable prices and production time.



Software

For all heat exchanger calculations Refra uses Unilab heat transfer calculation software, which meets Eurovent requirements and ensures precise results in any heat transfer case. For our OEM customers we offer coil calculation software developed by Unilab especially for Refra, incorporating all our production capabilities. This way Refra customers may calculate developed coils in different conditions or create new coils.



Refra offers a developed product range of condensers, drycoolers and gascoolers with plentiful options, starting with basic unit and up to non-standard product, designed to meet customer requirements. Also other heat exchangers can be offered on customer request. Evaporating units (min -15 °C), air coolers, air heaters, fluid coolers/heaters and other hot or cold heat exchange products are available on request.

Refra can offer not only standard products, but large variety of finned pack heat exchangers is available to meet our customer desires. We now offer the production of specific coils for Original equipment manufacturers (OEM). Fully individual product can be developed according to customer requirements, ensuring high quality and stable supply (refrigeration equipment, heat pumps, air conditioning, AHU and other). Almost any type of coil is possible with individual design according to customer requirements – either based on new thermodynamic task or an existing product.

Overview Of Main Production capabilities

► Coper Tubes

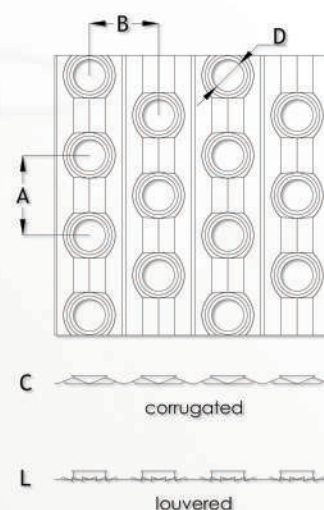
Outside diameter	Wall thickness	Inner surface type	Max operating pressure
5,0 mm	0,23 mm	grooved	48 bar
7,94 mm	0,28 mm	grooved	38 bar
	0,54 mm	smooth	120 bar
9,52 mm	0,28 mm	grooved	30 bar
	0,35 mm	smooth	48 bar
12,7 mm	0,41 mm	smooth	33 bar

► Fins

Aluminum, epoxy coated aluminum, hydrophilic aluminum and copper. Fin spacing: 1,6 mm to 6,5 using 2,1 and 2,5 as standard. Additional KSM protect coating for maximum anti-corrosion protection. Galvanized steel powder painted frames, (stainless steel and aluminum is available).

► Available Fin Geometries

Geometry	D, mm	A, mm	B, mm	Corrugation	Fin spacing
G00	5,00	20,00	17,30	C	1,5 - 3,5 mm
G01	7,94	25,40	19,05	C, L	1,5 - 3,5 mm
G11	7,94	25,00	21,65	C	1,5 - 4,5 mm
G02	9,52	25,00	21,65	C	1,5 - 4,5 mm
G03	12,7	31,75	27,50	C	1,6 - 6,5 mm



5 Buffer Tanks & Pressure Vessels



Pressure vessels

In order to better satisfy our customer needs, we have added a group of pressure vessels to our product range. Knowledge, experience and constant cooperation with industry professionals allows us to find the best solution at the shortest possible time, which completely meets customer's needs and expectations. Depending on the situation, we can advise, consult and guide you through the all process: from the first scratch to the final product.

We are flexible, therefore, both, custom-made single piece and/or serial production are available after the final drawing confirmation. Each product is designed, produced and certified in accordance to the European Parliament and the Council Directive 2014/68/EU on pressure equipment (PED).

Upon request, we are able to produce:

Position	Vertical / horizontal
Max. allowable pressure	Up to 45 bar
Temperature range	-50/+120°C
Connections	Upon request
PED category	I-II-III-IV
Suitable for	all refrigerants

Buffer tanks & Heat recovery systems

It is hard to imagine today's modern refrigeration/ventilating or heating systems without energy storage and/or heat recovery. Buffer tanks and/or heat recovery systems allows to:

- ▶ Increase thermal inertia;
- ▶ Reduce number of cycles, increase system life-time and ensure proper operation;
- ▶ Recover and collect the heat from refrigeration plants;
- ▶ Maximize efficiency

Product group includes:

- ▶ **CS series** buffer tanks for cooling/ventilating systems;
- ▶ **HS series** buffer tanks for heating systems;
- ▶ **HR series** tanks for heat recovery;
- ▶ **DS series** buffer tanks for DHW storage and production;
- ▶ **CT series** multifunction tanks for heat accumulation and exchange, sanitary water preheating
- ▶ **PV series** includes all kind of pressure vessels

Materials:

- ▶ Available in carbon steel and/or stainless steel versions;
- ▶ Wide variety of heat exchangers - carbon steel, stainless steel, copper and/or tin plated copper internal or external heat exchangers, suitable for various applications;
- ▶ 50 / 100 mm thickness soft foam polyurethane and/or 20 / 40 mm thickness closed-cell elastomeric rubber foam thermal insulation covered with removable soft shell PVC cover comes as standard

Range: From 100 L to 30 000 L volume available

6 Hydronic Modules

Number of pumps

Apart from the different types of frames available, REFRA hydronic modules can be built with:

- ▶ Single (main) pump
- ▶ Twin or dual (main + reserve or peak)
- ▶ Triple (main + reserve + peak) pumps

Even more pumps can be added on request.

Fields Of Application:

- ▶ Refrigeration
- ▶ Air conditioning/ventilation;
- ▶ Heating;
- ▶ Process cooling;
- ▶ Heat recovery.

Variety of options

Easy to install - Plug & Play – majority of mechanical, electrical, safety and hydraulic parts are connected and installed into one system;

Compact design;

Suitable for outdoor installations (B Type version only);

Easy to maintain – all our units are equipped and supplied with butterfly valves before and after each pump by default;

Durability – designs with double and/or triple pumps ensures smooth system operation 24/7

Certification – All units are designed, produced, tested and certified in accordance to the European Parliament and the Council Directive 2014/68/EU on pressure equipment (**PED**); **CE marked**.

Taylor-made solutions – Please contact us and we will design and produce hydronic module according your requirements.

Overview

The more efficient refrigeration, air conditioning/ventilation or heating systems become, the more complex they are. In many cases, the system consists of several hundreds or even thousands of different parts and components. However no matter the size or complexity of the system, if there is something to be cooled or heated, there will be liquids or gases, which must be circulated in order to ensure efficient heat transfer. To do so, REFRA offers wide range of hydronic modules for different applications.

Available in different designs:

N Type – integrated in the heating/cooling unit or mounted on buffer tank;

R Type – mounted in the assembled (joined-by-rivets) open frame;

B Type – mounted in the covered assembled frame (suitable for outdoor installations);

S Type – mounted on the welded platform (single stage, easy maintenance, low price)

Variety of options

On request, two (e.g. heating and cooling) or more hydronic modules can be built on the single frame. Buffer tank and/or filling station can be added. Control board and/or inverter can be installed. Different types of connections (soldered, victaulic, flange, welded or screw) available on request. Thermal insulation for different applications available on request.



Hydronic module

Overview

Ice bank systems are the most cost effective solution for the processes with energy consumption peaks. The system allows to collect the cold during the off-peak hours at nighttime, taking advantage of lower ambient temperature and electricity tariffs. Furthermore, due to the ability to use the collected energy when it most needed, consumption peaks are amortized, so smaller refrigeration units are required to satisfy the demand. This reduces the fixed costs, saves money at long term and simplifies the refrigeration system maintenance.

Ice Banks



Fields Of Application:

- ▶ Food production;
- ▶ Winemaking and breweries;
- ▶ Dairies and beverages;
- ▶ Chemicals and pharmaceuticals;
- ▶ Air conditioning and district cooling.

Available Designs:

- ▶ Direct expansion evaporator (Freon system);
- ▶ Glycol system;
- ▶ Flooded system for ammonia.

Range:

- ▶ Storage capacity from 30 kWh to 2000 kWh available

Available Designs:

- ▶ Heat exchanger and inner bath in stainless steel;
- ▶ Rigid polyurethane foam insulation;
- ▶ Sandwich panels external container as standard;
- ▶ Galvanized or stainless steel versions available upon request



Ice bank

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Cold Room Doors



Cold room doors and area separation doors

Refra produces wide range of cold room and area separation doors. Our strength is high product quality, competitive prices, flexible approach to meet critical deadlines as required by customer and use of innovative solutions in door production.

Cold room doors

Our cold room doors include hinged and sliding models for chiller and freezer applications. All doors are available in custom sizes for temperature ranges from 0°C down to -45°C. We can offer different surfaces: painted metal sheet (colors on request), stainless steel (standard and decorated), and fiberglass. Plastic "U" shape frame makes doors completely cold-bridge free. Freezer doors are equipped with heating cables, double gasket and threshold. We also offer automatic kits for sliding doors with various options like remote controllers, radars, pull cords, batteries.



Area separation doors

Area separation doors, also called "swinging doors" designed to divide processing areas with a heavy passage of people and/or trolleys. We offer three models of area separation doors:

- ▶ Polyurethane inside doors, can be ordered with different surfaces: painted metal sheet (colors on request), stainless steel (standard and decorated) or fiberglass.
- ▶ Hard plastic doors are made from polyethylene PE500 sheet. Can be ordered with different colors and hinge applications.
- ▶ Flexible PVC doors made from welded together clear and grey PVC strips. Can be ordered with different hinge applications.

Metal Shop

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Metal processing line

Refra metal processing line can produce not only standard frames for refrigeration equipment, but as well equipment for commercial and HoReCa markets and all kind of non-standard metal products. We can offer a wide range of products: from simple frames, stainless steel tables to electric ranges, refrigerated counters, cash desks-checkouts, pools and more. We can process various types of metals. Thanks to a large team of experienced designers and engineers, we can implement your desired metal projects.

Refra has following metal process possibilities:

- ▶ CNC Laser cutting
- ▶ CNC metal cutting with guillotine shear
- ▶ CNC metal bending
- ▶ 3D tube bending
- ▶ Perforating
- ▶ CNC milling and turning
- ▶ TIG, MIG, MAG welding
- ▶ Metal surface treatment: grinding, polishing.
- ▶ Powder Coating



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Control Box



Refra control box

Refra offers a variety of control options for compressor racks, chillers, co2 and other refrigeration systems. We deliver our units from no wiring up to high end preprogrammed plug and play systems. Units are equipped with common control elements and safety components – sensors, relays and other accessories. Refra uses high quality electrical components in our cabinets, such as Siemens, Phoenix and other, to ensure best quality and functionality. Any control cabinet can be custom made according to customers' requirements and desires.



Additional options:

- ▶ IQ module (only for Bitzer compressors) compressor envelope monitoring
- ▶ Remote control
- ▶ Remote display
- ▶ Master/Slave control function
- ▶ Redundant control system
- ▶ Wall mounted cabinet (Pre-wired up to 5m cable distance from the unit)
- ▶ BMS (ModBus, LonWorks, BACnet or etc. depending on control equipment)
- ▶ Error code sending via SMS

About Company

JSC "Refra" is one of the leading companies in the field of manufacturing refrigeration equipment. The long-term work experience, cooperation with leading world producers of compressors and other parts of refrigeration equipment, the widest range of products, an individual approach to each client and professionalism - those advantages enabled our company to obtain wide publicity in refrigeration market segment. Production plant takes more than 15000 square meters and is divided into several departments:

- ▶ refrigeration and air conditioning department
- ▶ doors for cold-storage production department
- ▶ production of metal construction (frames and covered boxes) for central refrigerating systems
- ▶ painting department
- ▶ control equipment department
- ▶ buffer tanks & pressure vessels & hydronic modules department

Due to the effective combination of the department's work we able to offer non standart solutions for our customers and produce equipment in short terms. Moreover high qualified staff guarantees best quality of equipment.

Also using the "know how" technologies helps us to offer high quality and low price for all types of our products. Our products are compliant with next directives:

- ▶ EC Machinery Directive 2006/42/EC
- ▶ EC Low Voltage Directive 2014/35/EU
- ▶ EC Pressure Equipment Directive 2014/68/EU (PED)
- ▶ EMC Directive 2014/30/EU

The refrigeration units have been designed and manufactured in conformity to European Standards EN349, EN378, EN12263, EN60204-1 and other normative requirements.

The refrigeration units are certified and conform to all the requirements of the European Union.

UAB "REFRA"
Darius ir Gireno str. 179
Vilnius, LT-02189, Lithuania



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