Frigel

Intelligent Process Cooling

THE INNOVATION

ECODRY SYSTEM 4.0

PROCESS-SYNCHRONIZED COOLING

A PARADIGM SHIFT IN THE PLASTICS INDUSTRY

AUTOMOTIVE

PERFORMANCE

INCREASED PRODUCTIVITY

up to 50%

Each mold runs with the shortest cooling time, consistently producing high quality parts at the highest throughput.

REDUCED OPERATING COSTS

-40%

Energy savings (**up to 30%**), water savings (**up to 95%**) and maintenance costs Savings (**up to 40%**).

TOTAL MODULARITY

100%

Plug & Play concept. Easily expandable at any time. Total reliability.

SUSTAINABILITY

REDUCED "CARBON FOOTPRINT"

-40%

Unbeatable overall efficiency: intelligent use of energy and free-cooling opportunities.

MINIMIZED WATER FOOTPRINT

-95%

Adiabatic, closed circuit heat rejection technology with no process water evaporation or bleed-off.

REDUCED "RISKS OF EMISSIONS"

-95%

Uses small quantities of innocuous, low GWP refrigerant. Minimal disposal of water treatment chemicals.

THE NEW COOLING SOLUTION FOR AUTOMOTIVE ECODRY SYSTEM 4.0

The new approach covers all varieties of applications in automotive components molding with unbeatable performance improvements: real cooling cycle time reduction and running costs savings, together with outstanding reduction of environmental impact.

① ECODRY

Adiabatic Cooling System

Ecodry is a central closed-circuit Adiabatic Cooling System, designed as a replacement of old cooling tower technology. Ecodry is installed outdoors in order to reject to ambient the heat extracted from processes. This system provides direct cooling to all water consuming devices, such as hydraulic heat exchangers, extruder barrels, resin dryers, as well as water cooled air compressors and chillers, etc.

Main Features

- Maximum cooling water temperature: 30/35°C (85/95°F)
- Cooling capacity: 50 - 10000 kW (15 - 3000 tons)
- Process flow range: 10 - 2000 m³/h (50 - 9000 gpm)
- High Efficiency Adiabatic Chamber for air pre-cooling (internationally patented)
- Antifreezing self-draining configuration
- Large surface heat exchangers, with copper coils and aluminum fins with hydrophilic protection
- Axial fans with built in brushless EC inverter driven motors individually wired
- Modular design with preassembled stainless steel manifolds for interconnection
- Stainless steel structural frame and aluminum access panels
- Web-monitoring interface

Highlights

- Guaranteed operation, with minimum water consumption and maintenance even in extreme weather conditions up to 50°C (120°F) ambient temperature
- Safe winter operation without glycol down to -40°C (-40°F) ambient temperature
- High fan energy savings during partial load operation
- Compact design with minimum footprint required between units
- High reliability with electrical redundancy and 100% rust free materials

② MICROGEL for Injection Molding

Temperature Control Unit with Chiller & Booster Pumps

Microgel is a super-compact mold cooling unit specifically designed for "cycle cooling time reduction". Combines a water cooled chiller with one or two high flow booster pump temperature controllers with heating elements and a free-cooling valve. Allows for researching and recording the best setting of flow rate and temperature for each zone, optimizing product quality with the minimum cooling time.

Main features

- More than 50 models, MONO or DUO (one or two temperature zones)
- Wide temperature range: -5 to 90°C ± 0.2°C (23 to 194°F ± 0.5°F)
- Chiller capacity: from 16 to 212 kW (4.3 to 60 tons)
- Heating Capacity: from 6 to 48 kW
- Booster pump per zone: from 1 to 140 m³/h (5 to 220 gpm) - inverter (VFD)
- Temperature, flow and pressure digital readings (to and from mold)

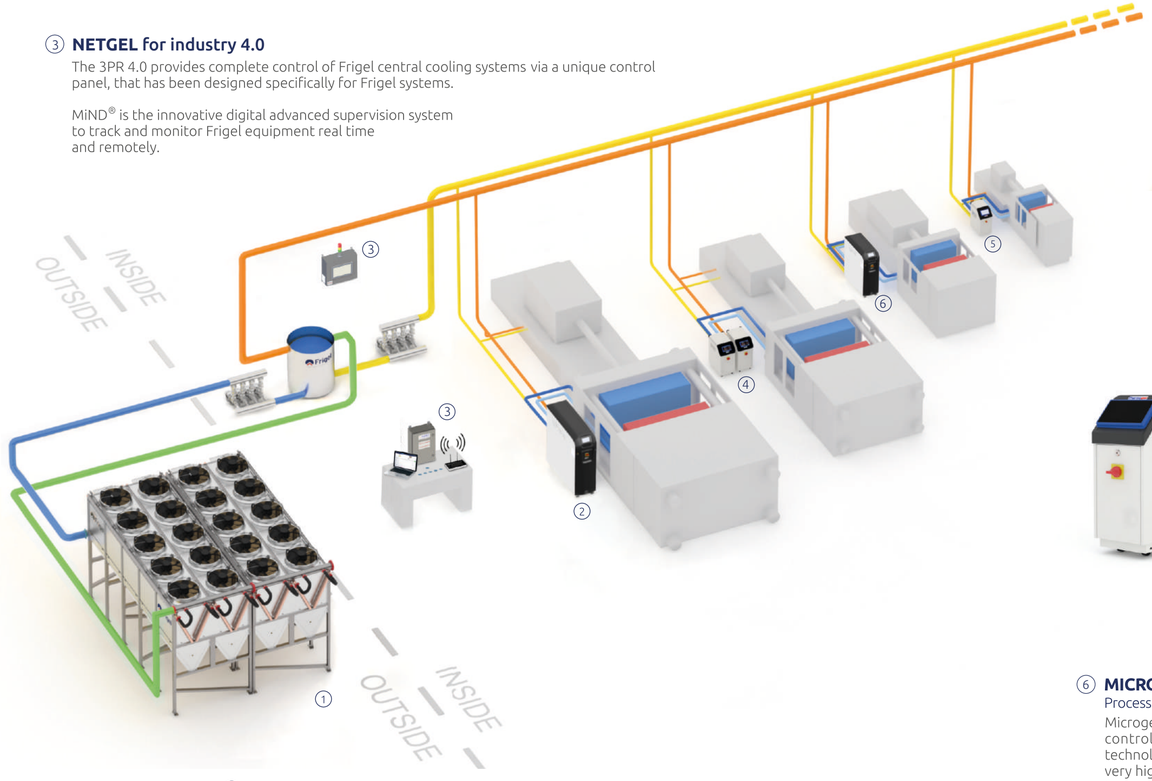
Highlights

- Cycle time reduction up to 25%
- Intelligent use of energy consumption
- High energy savings with automatic free-cooling
- Automatic mold draining
- Web-monitoring interface

③ NETGEL for industry 4.0

The 3PR 4.0 provides complete control of Frigel central cooling systems via a unique control panel, that has been designed specifically for Frigel systems.

MiND® is the innovative digital advanced supervision system to track and monitor Frigel equipment real time and remotely.



④ TURBOGEL

Booster Pump Temperature Control Units

Turbogel is a mold cooling unit with one or two high flow booster pump temperature controllers, specifically designed for "cycle cooling time reduction".
Allows for researching and recording the best setting of cooling parameters and sequence of heating and/or cooling that optimize product quality and cycle time.

Main features

- More than 20 models, MONO or DUO (one or two temperature zones)
- Wide temperature range: up to 90°C ± 0.2°C (194°F ± 0.5°F)
- Heating capacity: from 6 to 96 kW
- Booster pump per zone: from 1 to 250 m³/h (5 to 1100 gpm) - inverter optional
- Temperature, flow and pressure digital readings (IN/OUT)

Highlights

- High quality molded parts
- Cycle time reduction up to 20%
- Web-monitoring interface

⑤ THERMOGEL

Pressuized Temperature Control Unit

Thermogel is a pressurized water temperature controller designed for general plastics molding applications.

Main features

- Temperature range up to 140°C (284°F)
- Operates with pressurized water
- Automatic water filling system
- Direct or indirect cooling available
- Temperature, flow and pressure digital readings (IN/OUT)

Highlights

- High accuracy: ± 0.1°C (± 0.2°F) of set point
- High accessibility for easy maintenance
- High resistance to corrosion, components in non-ferrous material
- Web-monitoring interface

⑥ MICROGEL Syncro

Process synchronized TCU with onboard chiller

Microgel SYNCRO is new Frigel technology that revolutionizes the temperature control method of injection molding technical parts. The Microgel Syncro technology allows for a significant reduction in cycle time (up to 40%), guaranteeing very high product quality. Digitally synchronized with the molding process, Microgel Syncro provides cold water only during the cooling phase, reducing drastically the cooling time, while keeping the mold cavities hot during the injection phase.

Main features

- More than 10 models, dual temperature control zones
- Wide temperature range: -5°C to 90°C (23°F to 194°F)
- Chiller capacity: from 15 to 57 kW (4 to 16 tons)
- Heating capacity with SSR control: from 6 kW to 24 kW
- Booster pump with VFD per zone: from 1 to 24 m3/h (6 to 105 gpm)
- Mold temperature control parameter management (recipes)

Highlights

- Cycle time reduction up to 40%
- Simple synchronization control strategy
- Independent and autonomous solution, quick startup and use procedures
- Remote connectivity with web interface
- Weekly performance reporting focused on productivity and uptime
- Improved overall energy efficiency of the IMM cell

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www.frigel.com

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