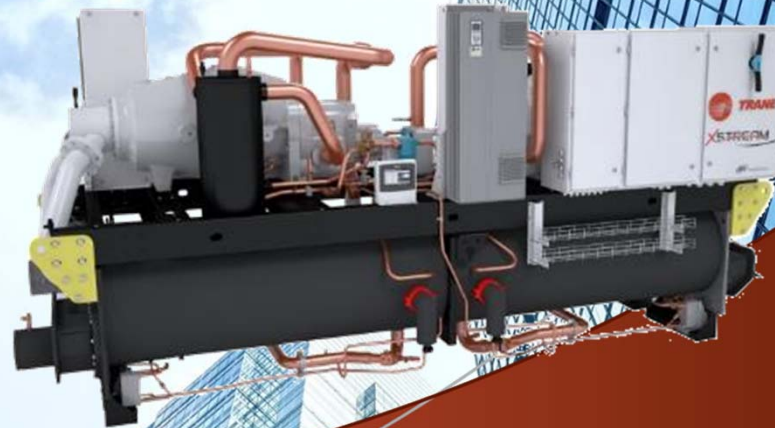




TRANE

XSTREAM

Water Cooled Screw Chillers And Water/Water Heat Pumps



IR Ingersoll Rand.



YOUR EXPECTATIONS IN ONE PRODUCT



Sustainability



Capacity



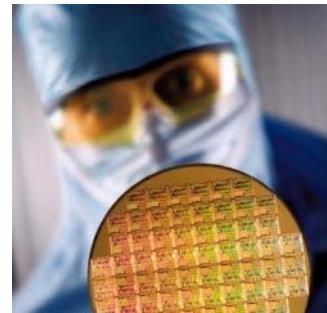
Efficiency



Versatility

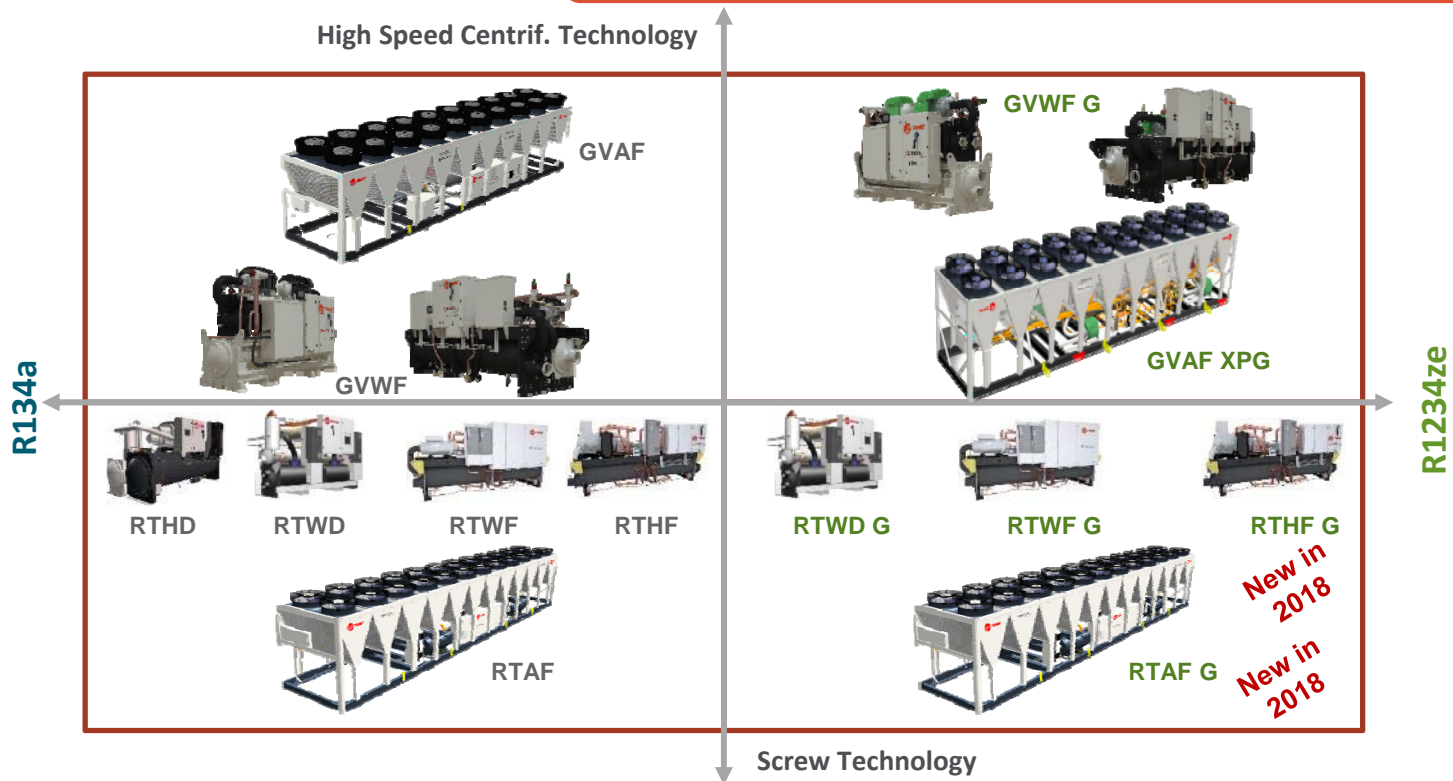


Reliability





A UNIQUE PORTFOLIO FOR YOUR NEEDS





HIGHEST CAPACITIES IN THE INDUSTRY



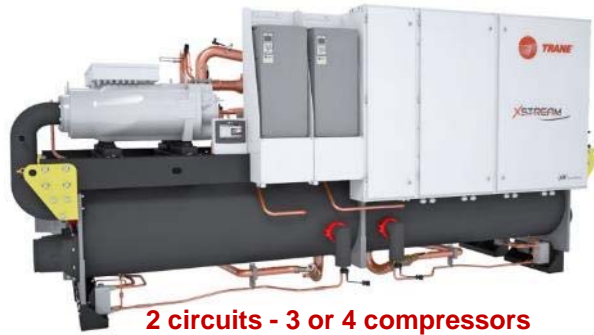
CAPACITY

EFFICIENCY

RELIABILITY

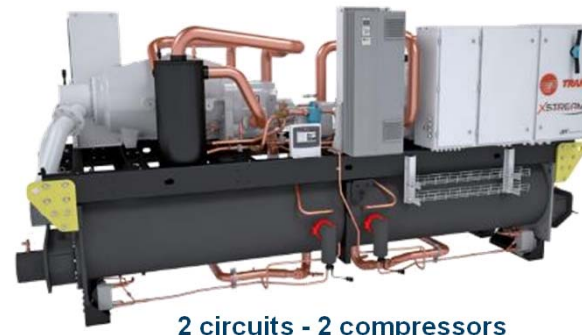
VERSATILITY

RTWF

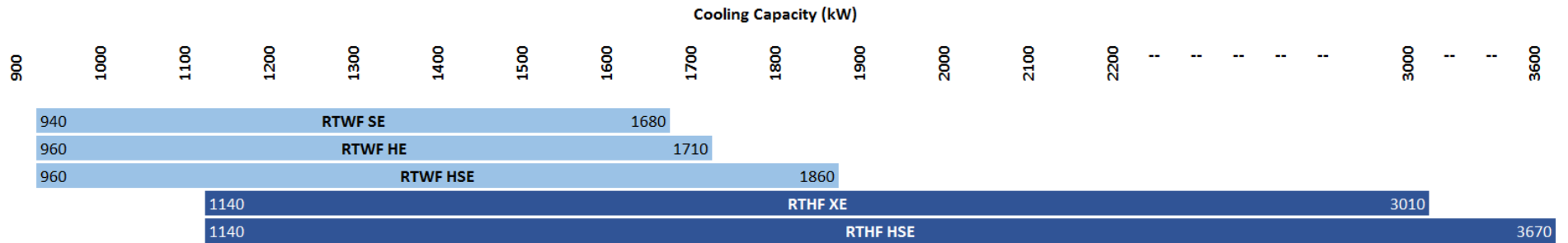


2 circuits - 3 or 4 compressors

RTHF



2 circuits - 2 compressors



Cooling capacities: 12/7° C Entering/Leaving evaporator - 30/35° C Entering/Leaving Condenser



TRANE®

XSTREAM

SPECIFIC CUSTOMER VALUES

- Stable part load performance - No Surge risk
- Double circuit
- Low refrigerant content
- Shorter delivery time (6 weeks)
- Low maintenance requirements
- Reduced maintenance costs
- Dual Power supply (option)
- All parts available in Europe





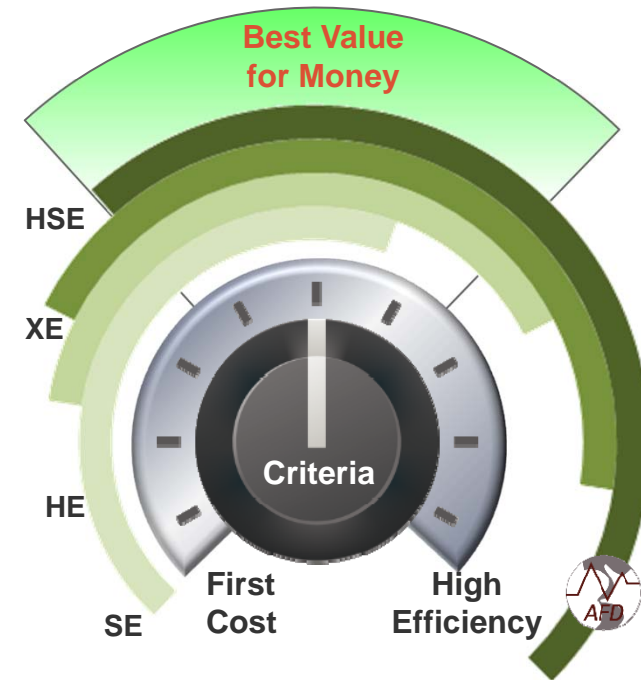
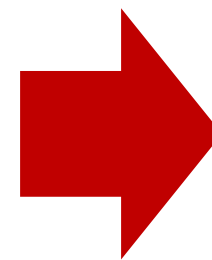
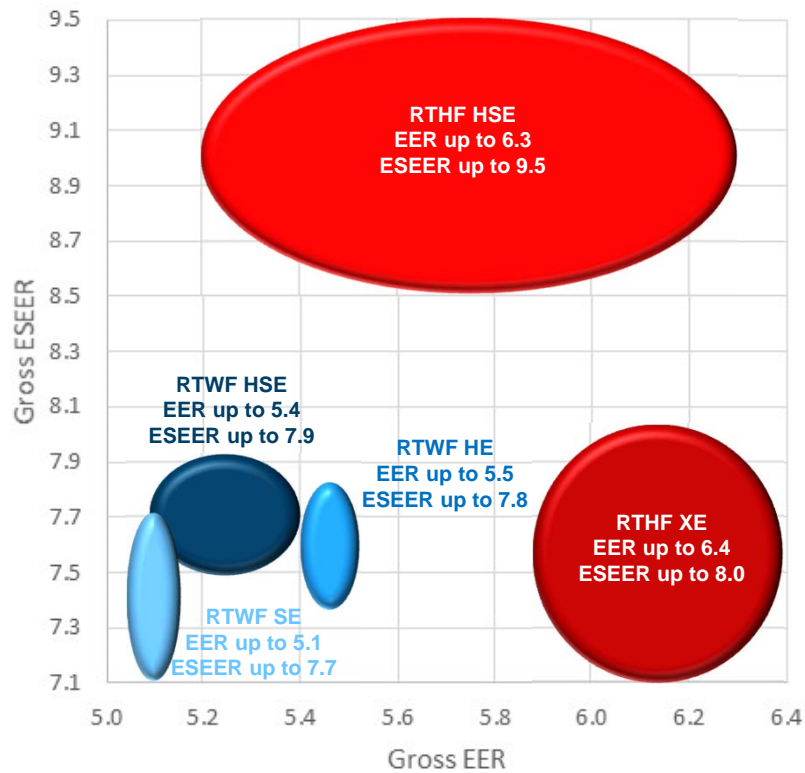
ONE PLATFORM, FLEXIBLE DESIGN

CAPACITY

EFFICIENCY

RELIABILITY

VERSATILITY





UNIT DESIGN

CAPACITY

EFFICIENCY

RELIABILITY

VERSATILITY



1 Compressor

- Direct drive, low speed
- Load matching down to 15% of full load

2 Heat Exchangers

- Cross Flow Serial Heat Exchangers design
- Trane patented evaporator design
- New condenser design
- Designed to convert Trane compressor design into premium performance at all applications

3 Controls

- Fastest controls of the industry
 - Safe VPF
 - No nuisance trips (Adaptive controls)
 - Temperature control within 0.3C

4 Adaptive Frequency™ Drive

- Industry leading Seasonal Efficiency
- Eliminates inrush current



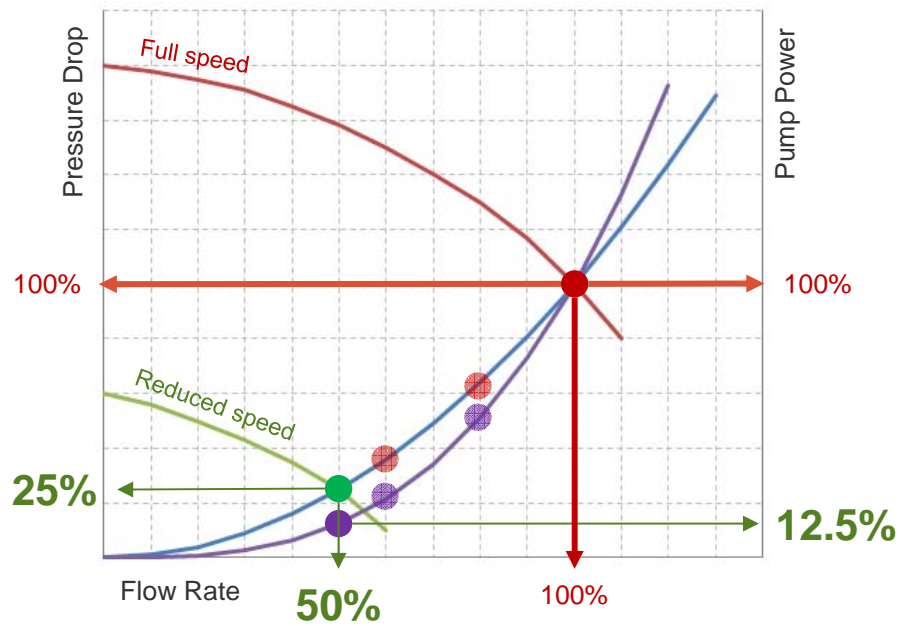
VARIABLE FLOW

CAPACITY

EFFICIENCY

RELIABILITY

VERSATILITY



Benefits

- **Less pump power for more system efficiency**
 - 80% part load = 51% pump power
 - 60% part load = 22% pump power
 - **50% part load = 12.5% pump power**
- Constant temperatures
 - Accurate stable controls
- Lower speed:
 - Lower pump wear
 - Less noise in piping and valves
 - Capacity increase of existing infrastructure



VARIABLE FLOW COMPATIBILITY

CAPACITY

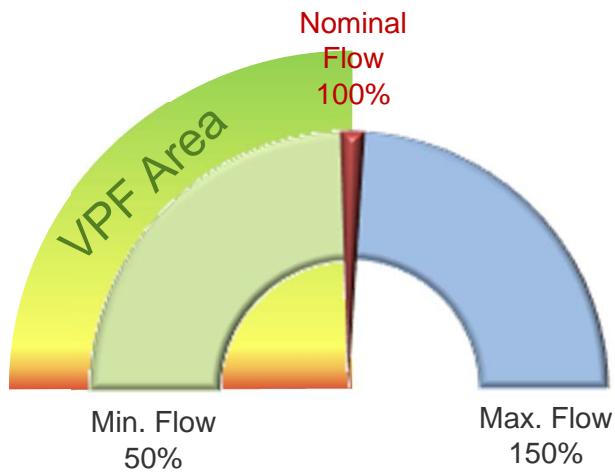
EFFICIENCY

RELIABILITY

VERSATILITY

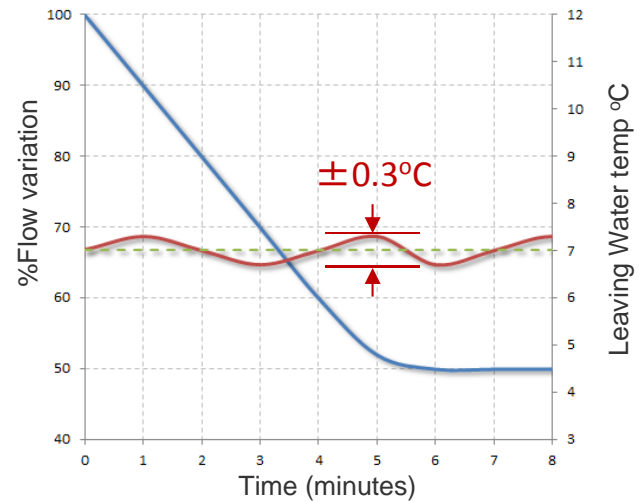
Evaporator

- Designed to manage VPF*



SmartFlow Control

- Algorithm designed to handle variations of 10% per minute
- Maintains water temperature within $\pm 0.3^{\circ}\text{C}$
- Ability to deliver a signal to control variable speed pump



*Variable Primary Flow



SERIES COUNTERFLOW CONFIGURATION

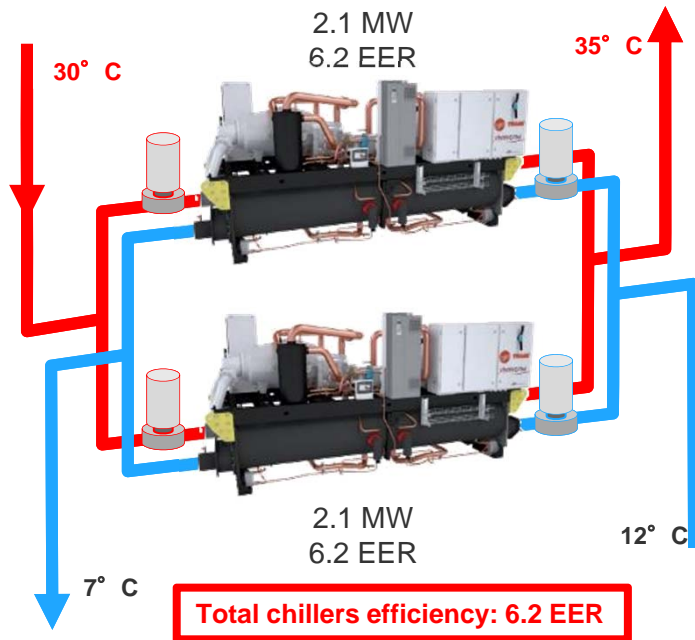
CAPACITY

EFFICIENCY

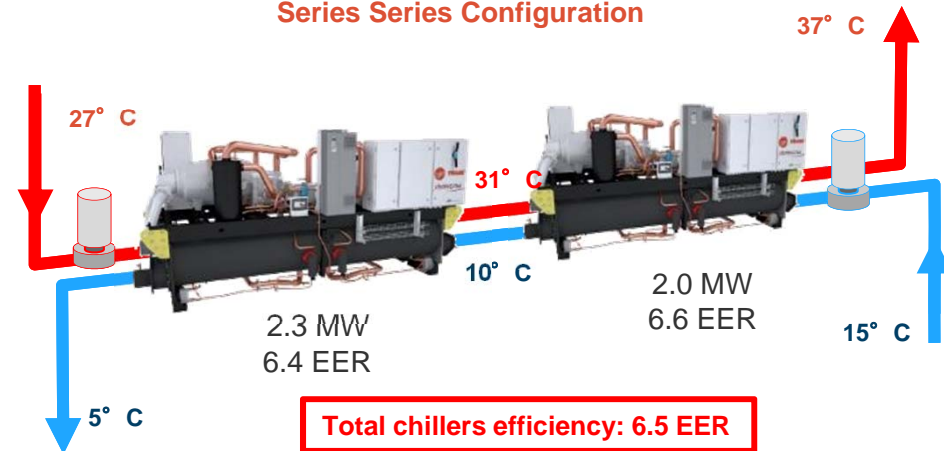
RELIABILITY

VERSATILITY

Traditional Parallel piped chillers configuration



Series Series Configuration



Series counterflow configuration

- Improves system efficiency
- Saves installation cost
 - Smaller diameter piping
 - Fewer pumps
 - Smaller pumps
- Great opportunity for Free Cooling on first Chiller (if appropriate)
- VPF operation further enhances system efficiency



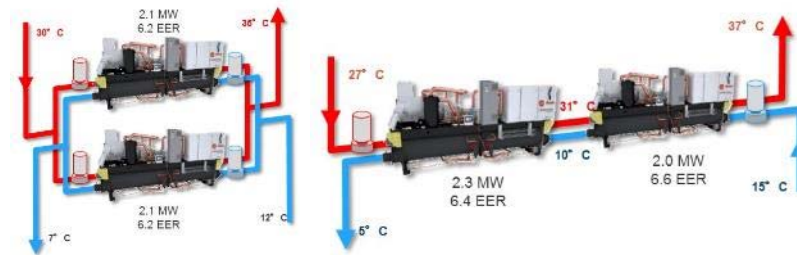
SERIES COUNTERFLOW CONFIGURATION

CAPACITY

EFFICIENCY

RELIABILITY

VERSATILITY



	Parallel Piped Chillers	Series Series Configuration	Benefits
Total Cooling Capacity	4238 kW	4325 kW	
Chillers EER	6.2	6.5	Enhanced efficiency
Necessary Pump Power (Chillers only)	11 kW 4 pumps	10 kW 2 pumps	Lower installation Cost
Pipe run	Cooling Side : 1000 m Rejection side: 1000 m		-
Pipe Diameter	Cooling Side : 16" Rejection side: 16"	Cooling Side : 12" Rejection side: 12"	Reduced cost of piping
Total System Pump Power	40 kW	29 kW	Reduced System Pump Power



COMPRESSOR

CAPACITY

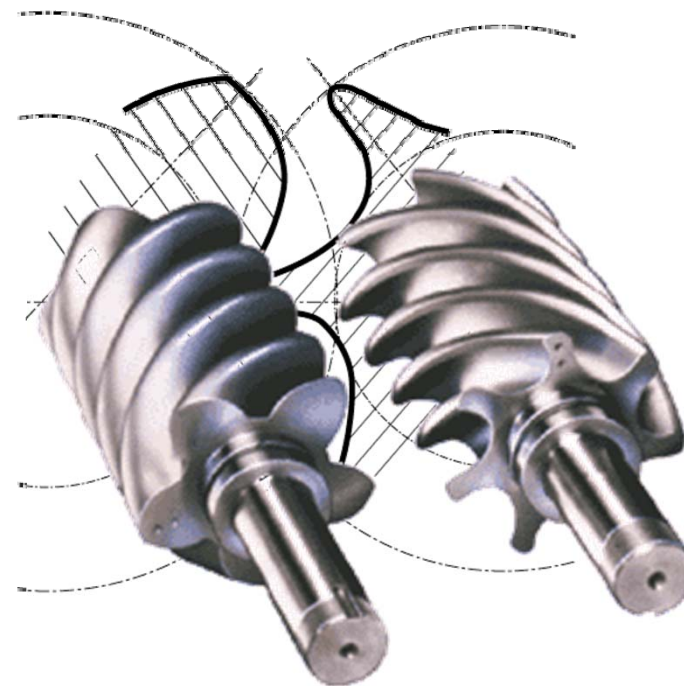
EFFICIENCY

RELIABILITY

VERSATILITY

More than 30 years of experience

- Designed, built and tested according to the highest demanding and rugged standards
- Proven track record
 - ➔ More than 300 000 compressors worldwide
 - ➔ Industry leading reliability: rate greater than **99.5%**
- Stable operation with no surge
- Fewer moving parts
- Direct drive low speed
- Suction gas cooled
- No oil pump needed
- Resistance to liquid slugging
- Field serviceable
- Wider operating map in the industry





CONTROLS

CAPACITY

EFFICIENCY

RELIABILITY

VERSATILITY



Intuitive Display in Local Language



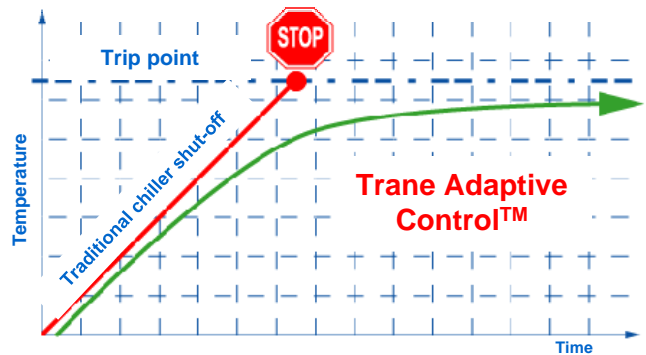
Trend Charts



Diagnostics

Trane Adaptive Control™

- Patented Industry leading algorithms
- Takes actions to prevent shutdown due to abnormal operating conditions:
 - Flow failure
 - Cooling tower or Dry cooler malfunction
 - Extreme operating conditions
- Clear visibility of operation through graphics:
 - Trend monitoring
 - Performance follow-up
 - Preventive maintenance anticipation
- More than 100 diagnostics made when a fault is detected
- Display indicates fault, time and date of diagnostic
 - Quick localization of problem
 - Faster action
- Allows problem fixing without shutting off
 - Downtime minimized





RELIABILITY IS NO COINCIDENCE

CAPACITY

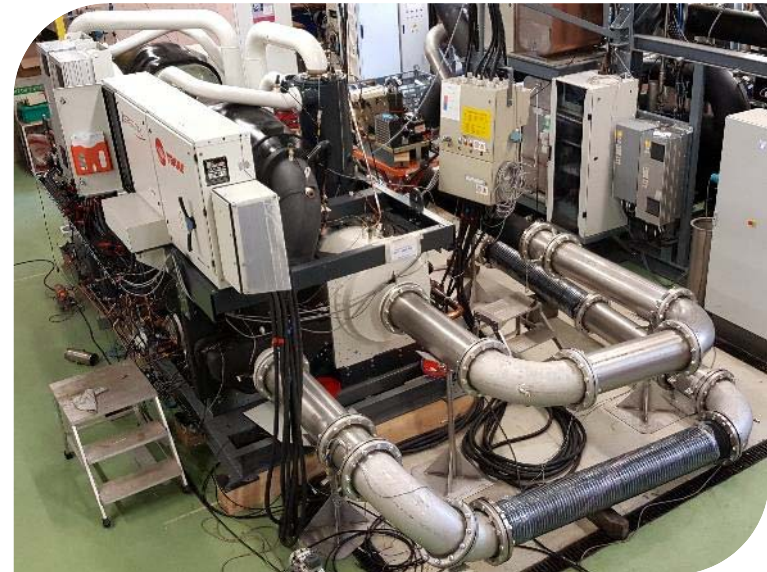
EFFICIENCY

RELIABILITY

VERSATILITY

Extended testing

- Operation in extreme operating conditions leading to World Class reliability
- Pressure vessels resistance
- Electro-Magnetic compatibility (CE compliance)
- Finite element analysis for structure and components design resistance and robustness
- Acoustics and vibrations testing





QUALITY STANDARDS

CAPACITY

EFFICIENCY

RELIABILITY

VERSATILITY



CE compliance

- Pressure Equipment Directive (PED) 97/23/CE
- Machinery Directive (MD) 2006/42/CE
- Low Voltage Directive (LV) 2006/95/CE
- Electromagnetic Compatibility Directive (EMC) 2004/108/CE
- Electrical Machinery Safety Standard EN 60204-1
- Electromagnetic Emission and Immunity Standard EN 61800-3 category C3

Quality Insurance processes

- ISO9001
- ISO14001

3rd Party certifications

- Eurovent for units up to 1500 kW
- AHRI for units above 700 kW

Guaranteed performance of the investment



DESIGNED FOR MULTIPLE APPLICATIONS IN COOLING OR HEATING

CAPACITY

EFFICIENCY

RELIABILITY

VERSATILITY



Office buildings



Healthcare



Data Centers



Automotive Industry



Pharmaceutical Industry



Food and Beverage Industry



Hospitality Industry



District Cooling
District Heating



OPERATING TEMPERATURE RANGE



CAPACITY

EFFICIENCY

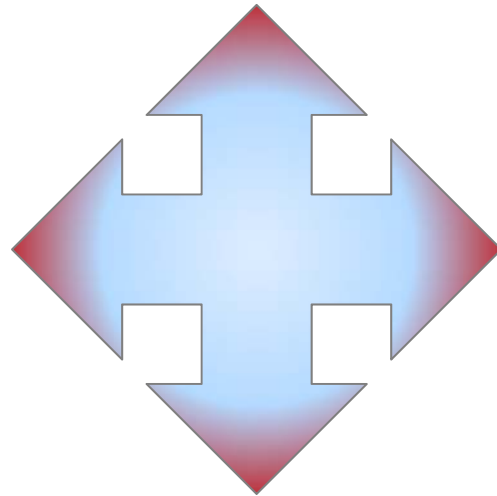
RELIABILITY

VERSATILITY

High condensing water
Heating applications

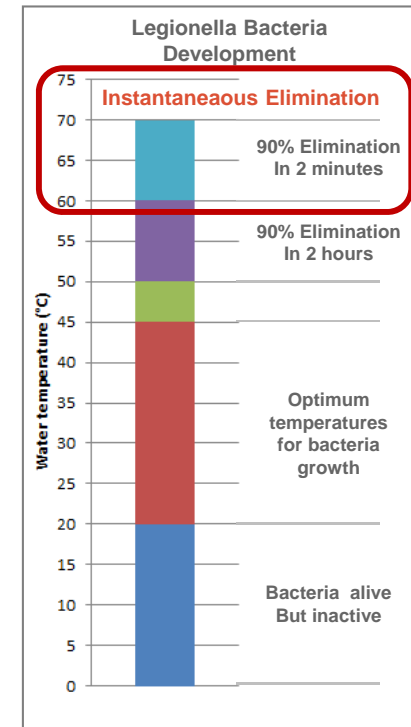
+68°C

Low Brine
Applications
-12°C



Comfort
High Temp. Process
+20°C

Low condensing water
+10°C





HEAT PUMP OPERATION

CAPACITY

EFFICIENCY

RELIABILITY

VERSATILITY

RTWF

- High leaving water temperature
 - Up to 68°C
- High capacity water/water heat pump
 - Up to 2.0 MW at 40/45°C*
 - Up to 1.9 MW at 47/55°C*
- High COP**
 - Up to 4.7 at 40/45°C*
 - Up to 4.0 at 47/55°C*
- Dedicated and optimized compressor for heating applications



* Entering/Leaving evaporator : 10/7°C

** Net COP Calculated according to EN14511-2013 standard



BRINE PROCESS APPLICATIONS

CAPACITY

EFFICIENCY

RELIABILITY

VERSATILITY



- Compliant with Med Temp industrial process application minimum efficiency requirements (SEPR)
 - European regulation (EU) 2015/1095
 - Entry into force on 2016, July 1st
- Operation from 4 down to -12°C leaving water temp
- Dedicated compressor for efficiency and reliability
- Operation with various brines:
 - Ethylene Glycol
 - Propylene Glycol
 - Ethanol
- Value of standardized design, capable to meet special requirements



ICE STORAGE

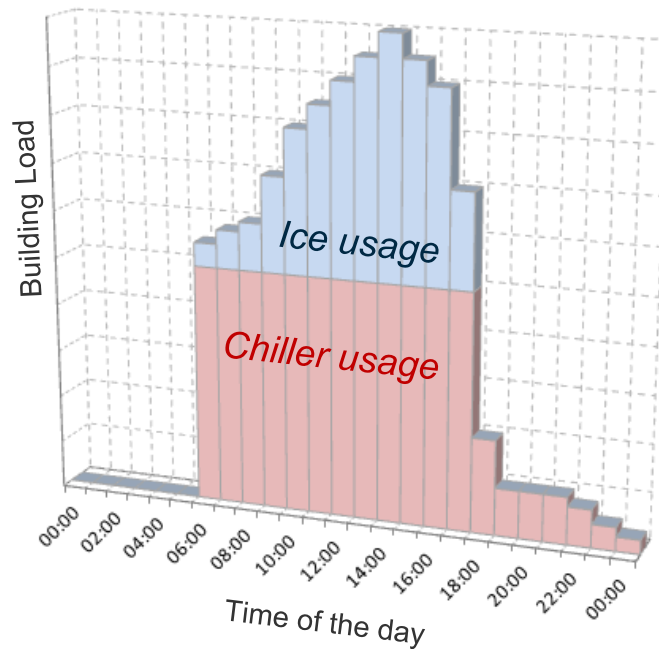
CAPACITY

EFFICIENCY

RELIABILITY

VERSATILITY

Typical ice storage application



- Energy storage application
- Chiller builds ice when utility rates are lower, or when heating requirement overtakes cooling requirement
- Chiller smartly balances the contribution of ice melting and chiller operation to meet the cooling load with the best system efficiency
- Controls takes charge of:
 - controlling set points,
 - actuating chiller and or ice pump and other accessories



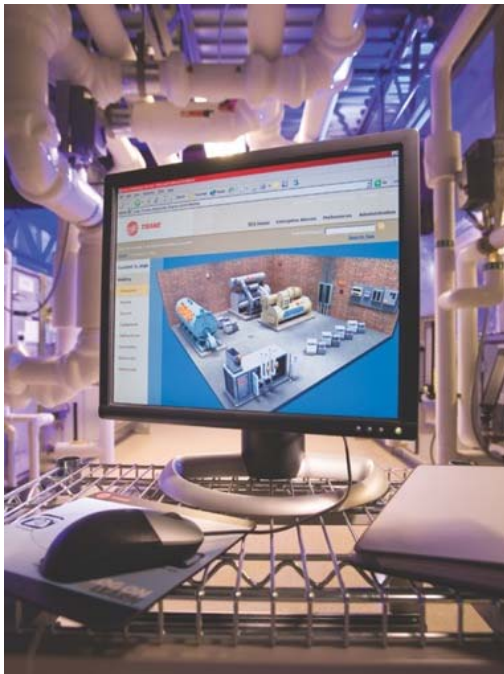
COMMUNICATION

CAPACITY

EFFICIENCY

RELIABILITY

VERSATILITY



- Compatible with all Trane Building Management Systems and chiller plant controls
- Communication interfaces
 - BACnet™ IP
 - BACnet™ MSTP
 - ModBus™ RTU
 - LonTalk™ (LCI-C)





YOUR EXPECTATIONS IN ONE PRODUCT



Capacity



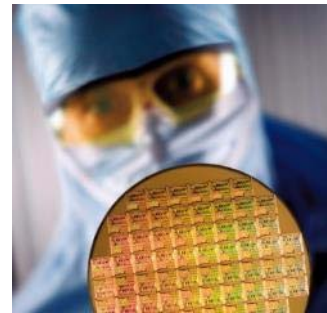
Efficiency



Versatility

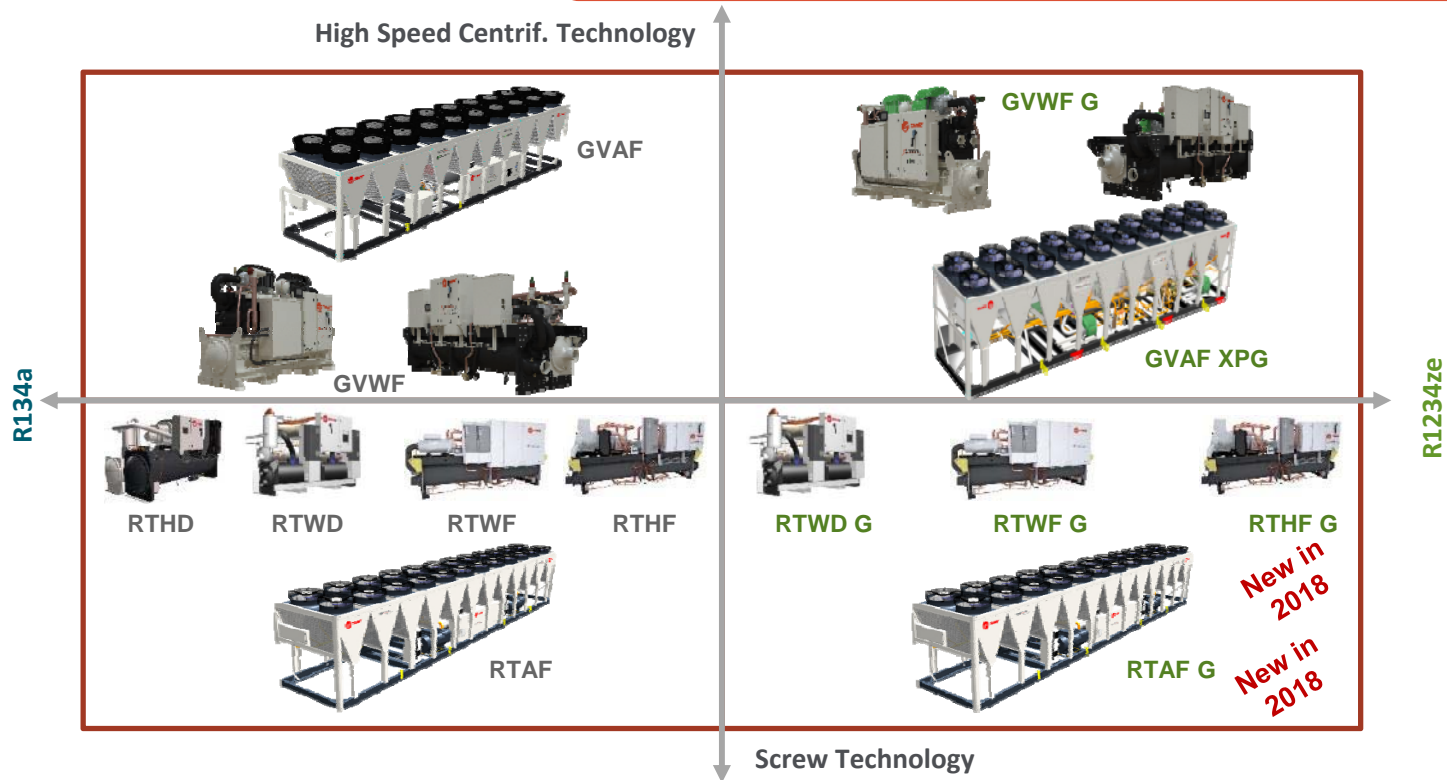


Reliability





A UNIQUE PORTFOLIO FOR YOUR NEEDS





TRANE[®]

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