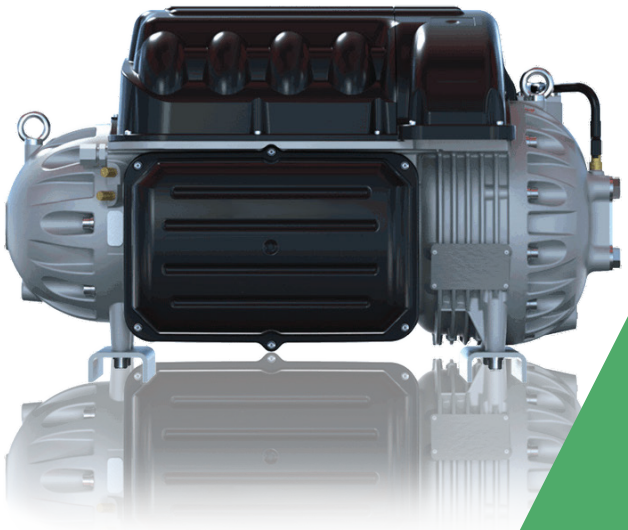
IDEA

PREMIUM **HVAC SOFTWARE**



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HVAC software design

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HVAC software design

TURBOCHILL advanced design software for Turbocor Chillers.

You are tasked with designing the most critical component of DATA CENTER or INDUSTRIAL PROCESS: **THE COOLING SYSTEM.**

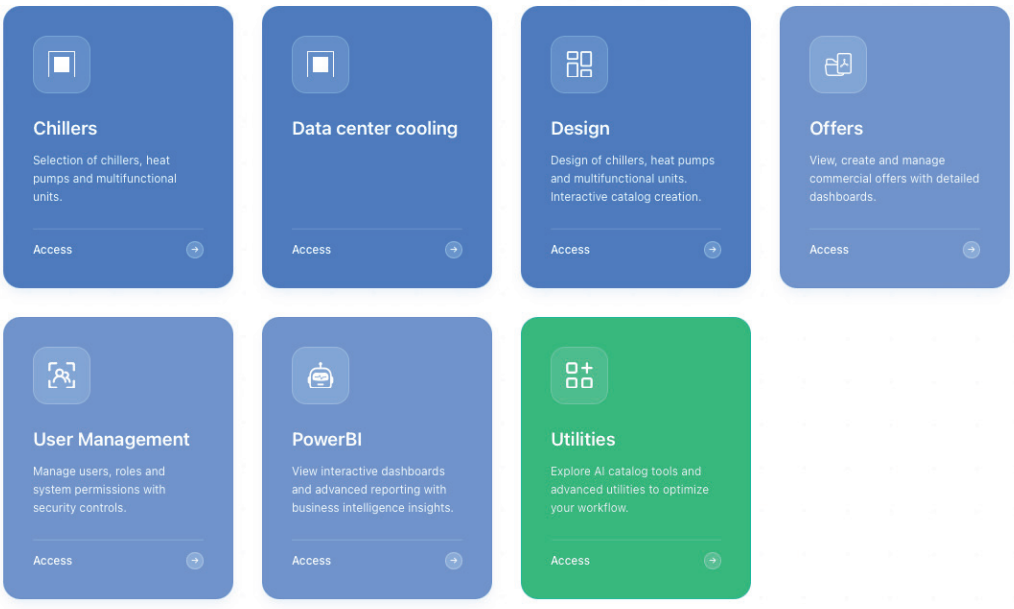
The specifications are tight, the deadlines tighter, and the margin for error is zero. You need a tool that doesn't just calculate, but optimizes.

INTRODUCING TURBOCHILL:

the revolutionary software solution engineered exclusively for designing high-efficiency chillers powered by Turbocor compressors. It's more than just design software, it's your direct access to a centralized, always-correct product ecosystem, eliminating guesswork and manual data cross-referencing.

It ensures precise thermal modeling, reliable system simulations, and energy-optimized configurations that meet the most demanding engineer expectations.

TURBOCHILL is the specialized design module of the IDEA SUITE HVAC, a comprehensive Product Information Management (PIM) system.



Design chillers faster. Smarter. More competitive.

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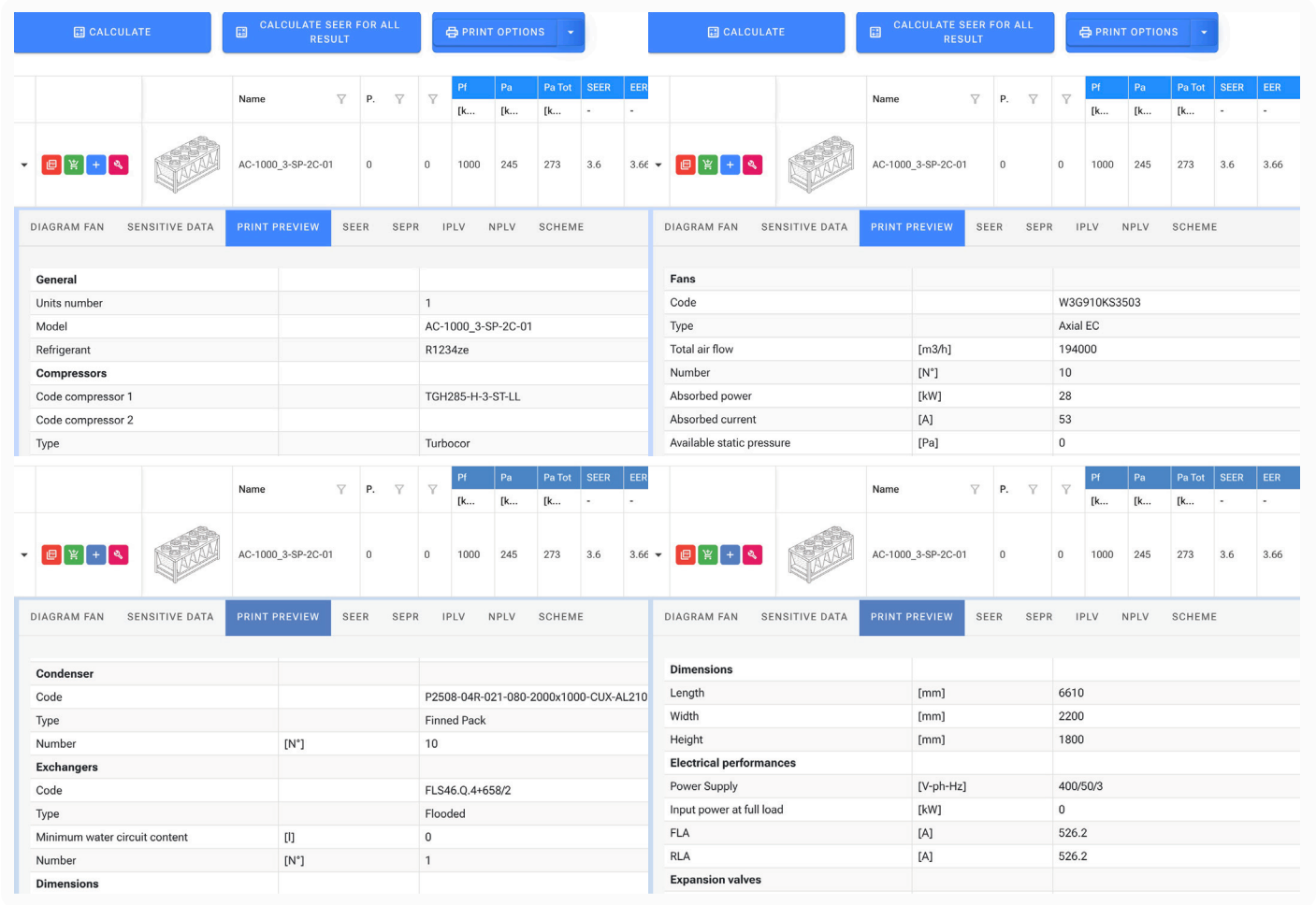
NEW dimension in Chiller design

The Engineering Challenge: Data Silos vs. Optimal Design

Traditional chiller design often involves a fragmented process:

Manually cross-referencing datasheets from multiple suppliers.
Risking errors with outdated component performance curves.
Wasting valuable time on administrative tasks instead of innovation.
Struggling to generate consistent technical documentation for bids and production.

This disjointed approach creates bottlenecks, introduces risk, and stifles your ability to deliver the most competitive and efficient designs.



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NEW dimension in Chiller design

TURBOCHILL transforms this challenge into a seamless, integrated workflow.

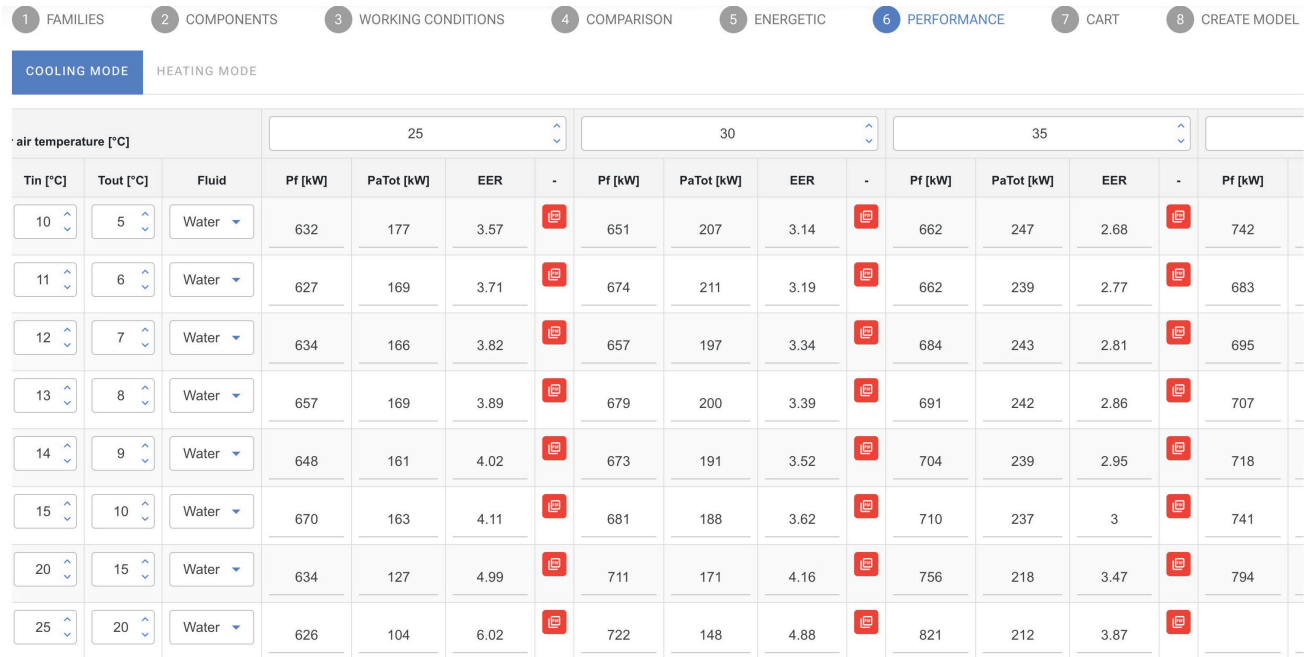
It is built from the ground up to leverage the unique performance characteristics of **Turbocor magnetic bearing compressors**, giving you a decisive edge.

Developed for professional designers and HVAC manufacturers, TURBOCHILL combines scientific rigor with user-oriented intelligence.

Its advanced calculation engine and integration capabilities allow design teams to model every operating scenario—from full load to partial load-optimizing system efficiency, capacity control, and cost of ownership.

WHY ENGINEERS CHOOSE TURBOCHILL

Performance-oriented design with predictive efficiency optimization.
Real-time simulation of compressors, exchangers, and fans.
Full digital twin environment for system validation.
Integrated AI-based load prediction and automatic documentation.



air temperature [°C]			25				30				35				
Tin [°C]	Tout [°C]	Fluid	Pf [kW]	PaTot [kW]	EER	-	Pf [kW]	PaTot [kW]	EER	-	Pf [kW]	PaTot [kW]	EER	-	Pf [kW]
10	5	Water	632	177	3.57		651	207	3.14		662	247	2.68		742
11	6	Water	627	169	3.71		674	211	3.19		662	239	2.77		683
12	7	Water	634	166	3.82		657	197	3.34		684	243	2.81		695
13	8	Water	657	169	3.89		679	200	3.39		691	242	2.86		707
14	9	Water	648	161	4.02		673	191	3.52		704	239	2.95		718
15	10	Water	670	163	4.11		681	188	3.62		710	237	3		741
20	15	Water	634	127	4.99		711	171	4.16		756	218	3.47		794
25	20	Water	626	104	6.02		722	148	4.88		821	212	3.87		

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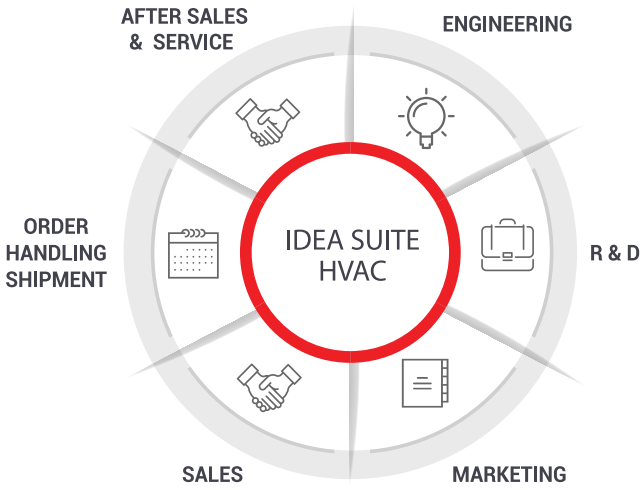
Connected to IDEA SUITE HVAC PIM SYSTEM

TURBOCHILL is part of the IDEA SUITE HVAC platform- a comprehensive Product Information Management (PIM) system specialized for the HVAC sector.



IDEA SUITE HVAC enables:

Centralized management of master data, technical specifications, and marketing content.

Automatic updates across engineering, sales, and after-sales departments.

Integrated content creation for brochures, price lists, and technical sheets.

Real-time data analysis using Power BI dashboards.

Multilingual material production for global teams.

By linking TURBOCHILL with IDEA SUITE, manufacturers and design offices can synchronize design data with marketing and operational content, ensuring consistency and efficiency across the entire product lifecycle.

EXPLORE MORE- PIM

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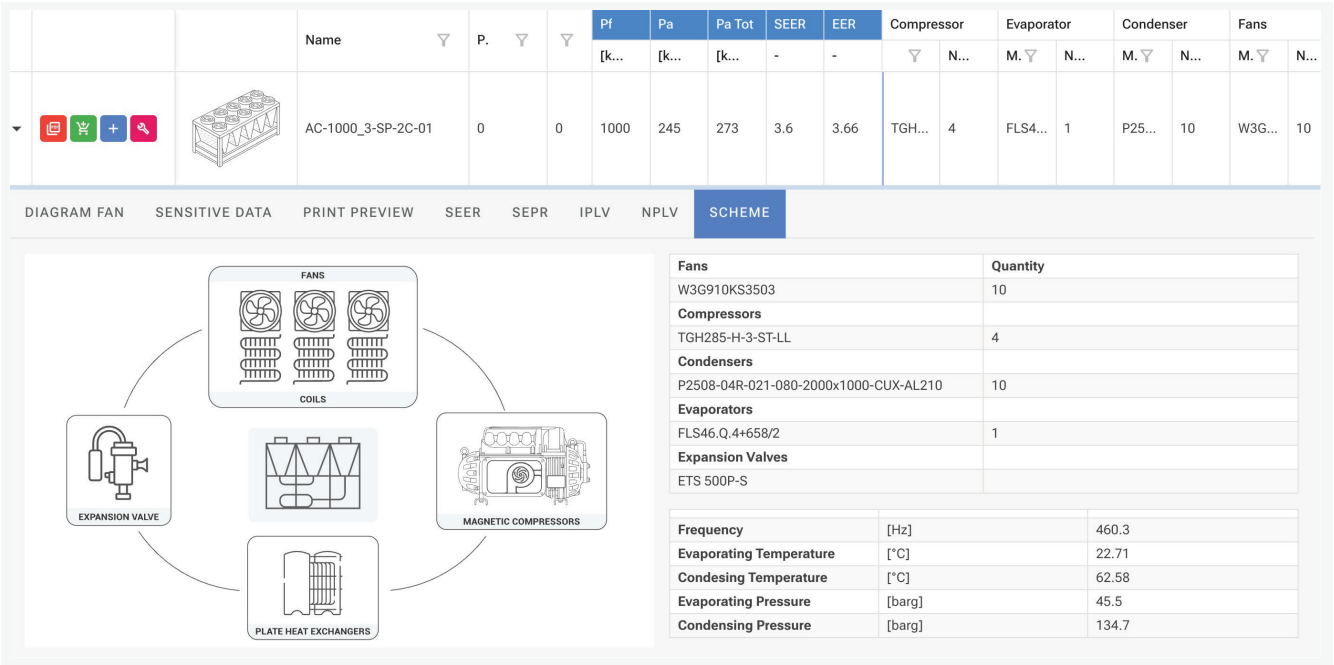
Turbochill advanced design software- ENGINEERED FOR PRECISION

At the core of TURBOCHILL lies its **ENGINE,** a proprietary thermal model recognized for **calculation rigor, speed, and reliability.**

Calculation Methodology

- **Multi-zone heat exchanger** modeling based on NTU–ε and local balance equations, 10x more accurate calculations = zero costly errors during installation.
- **Real-time calculation of refrigerant properties** via CoolProp integration.
- **Full thermodynamic and transport property** resolution across subcooled, two-phase, and vapor regions.
- **Dynamic fan and compressor models** including Turbocor technology.
- **Automatic optimization** of airflow, speed, and absorbed power.
- **Accurate expansion valve sizing** for all refrigerants and load conditions.

This approach allows users to simulate the true thermodynamic behavior of turbochillers with exceptional precision, from startup to variable-load operation.



Explore more- Thermodynamic Fundamentals Design

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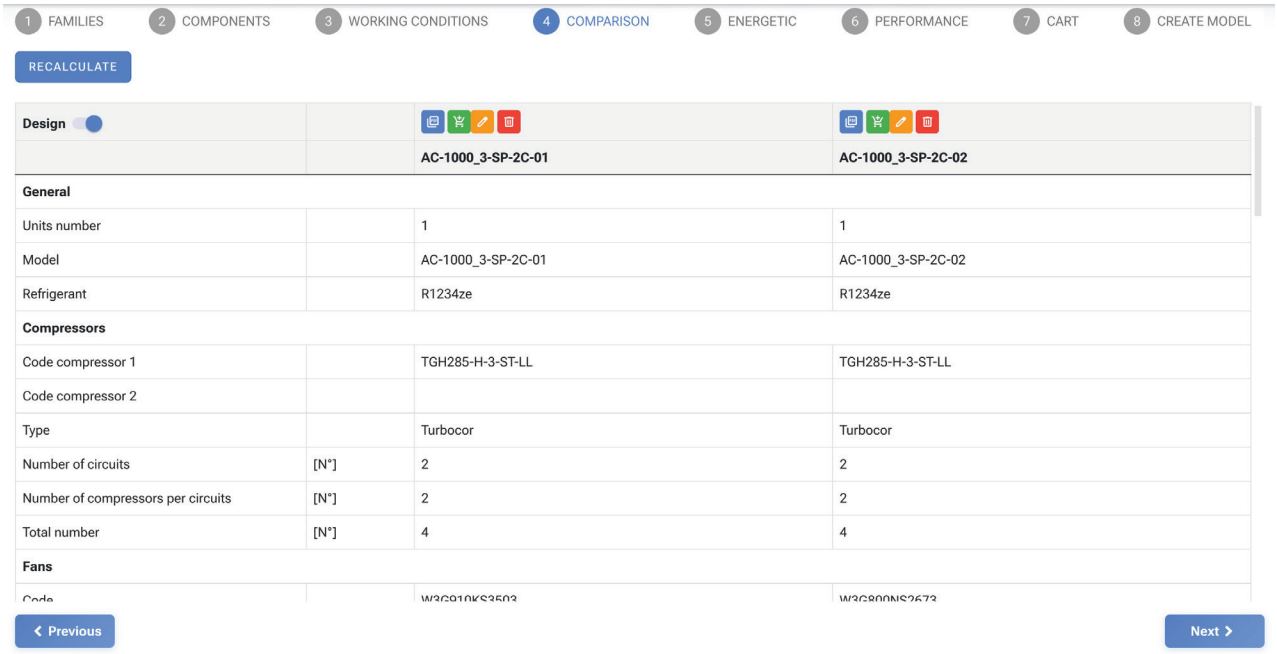
Turbochill advanced design software- **ENGINEERED FOR PRECISION**

How it works for you?

- **Pre-Loaded, Always-Updated Turbocore Libraries:** Access the latest, certified performance data, pressure-enthalpy diagrams, and operational limits for the entire Turbcor compressor range directly within the software. No more searching for the correct PDF.
- **Intelligent System Optimization:** The software doesn't just size components; it models the entire chiller system. Automatically find the optimal setpoints for maximum efficiency (lowest kW/ton) at your specific operating conditions.
- **Automated Component Selection:** Instantly select compatible heat exchangers, valves, and system components from a validated, pre-approved database, ensuring reliability and performance.
- **Rapid "What-If" Scenario Analysis**: Test different operating conditions, refrigerants, or component combinations in seconds. Make informed, data-driven decisions to meet exact client requirements.



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KEY FEATURES

- Advanced thermal and aerodynamic modeling with real-time optimization.
- Energy efficiency calculators with predictive analytics.
- Digital twin capabilities and load scenario simulation.

BENEFITS FOR ENGINEERING TEAMS

- **30–40% faster custom chiller design cycle.**
- **Up to 25% improvement in system energy performance.**
- **Simplified compliance** with latest energy efficiency standards.
- **Reduced risk of design errors** and full traceability of calculations.
- **Reliable documentation** automatically aligned with design updates.
- **Last minute:** client changes thermal specifications. With traditional methods, that means days of rework, with TURBOCHILL, some minutes.

PRODUCT FICHE according to European Regulation n° 2016/2281: Information requirements for high temperature process chillers							
Model:	AC-1000_3-SP-2C-01						
Type of condensing:							Air
Refrigerant fluid:							R1234ze
Item			**Symbol**		**Value**		**Unit**
Operating temperature			t		7		°C
Seasonal energy performance ratio			SEPR		5.23		[-]
Annual electricity consumption			Q		951192		kWh/a
Operating temperature			SEPR		5.23		[-]
Annual electricity consumption			Q		951192		kWh/a
Parameters at full load and reference ambient temperature at rating point A (**)							
Rated refrigeration capacity			PA		674.01		kW
Rated power input			DA		227.71		kW
Rated energy efficiency ratio			EERDC,A		2.96		[-]
Parameters at rating point B							
Declared refrigeration capacity			PB		626.83		kW
Declared power input			DB		155.16		kW
Declared energy efficiency ratio			EERDC,B		4.04		[-]
Parameters at rating point C							
Declared refrigeration capacity			PC		586.39		kW
Declared power input			DC		116.12		kW
Declared energy efficiency ratio			EERDC,C		5.05		[-]
Parameters at rating point D							
Declared refrigeration capacity			PD		539.21		kW
Declared power input			DD		88.98		kW
Declared energy efficiency ratio			EERDC,D		6.06		[-]
Other items							
Capacity control			Variable				
Degradation co-efficient chillers (*)			Cdc	0.9	[-]		
GWP of the refrigerant					kg CO2 eq (100 years)		
(*) If Cdc is not determined by measurement then the default degradation coefficient of chillers shall be 0.9.							
(**) For staged capacity units, two values divides by a slash ('/') will be declared in each box in the section referring to 'refrigeration capacity' and 'EER'.							

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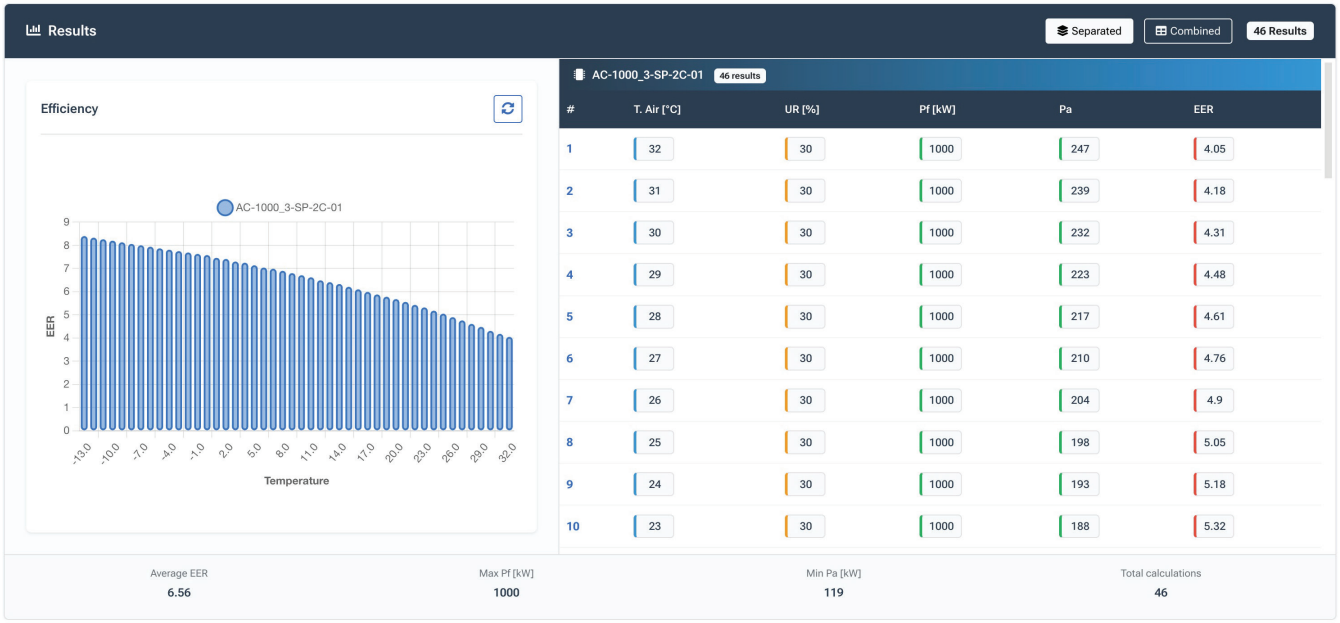
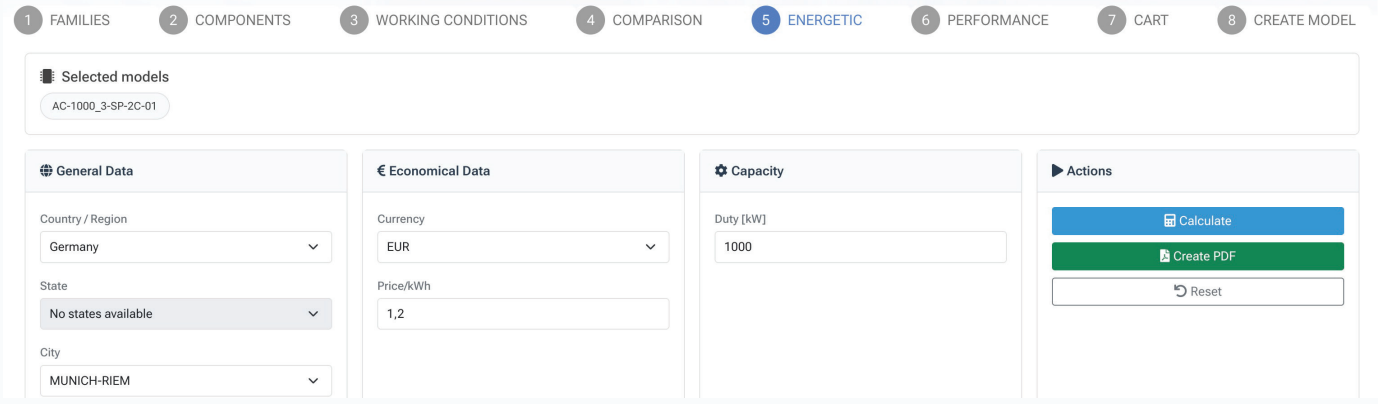
ENERGETIC ANALYSIS





Results Table

#	T. Air [°C]	UR [%]	AC-1000_3-SP-2C-01		
			Pf [kW]	Pa [kW]	EER
1	-13.0	30	1000	119	8.4
2	-12.0	30	1000	120	8.33
3	-11.0	30	1000	121	8.26
4	-10.0	30	1000	122	8.2
5	-9.0	30	1000	123	8.13
6	-8.0	30	1000	124	8.06

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TURBOCHILL advanced design software for Turbocor Chillers

Proven Benefits

Time Reduction

30–40% reduced design and engineering time

Operational Efficiency

Up to 25% higher operational efficiency for custom chillers

Regulations Compliance

Full compliance with energy and market regulations

Error-free Documentation

Reliable, error-free documentation aligned with design changes

User Permissions

Secure data governance with role-based user permissions

Your Direct Workflow Advantages

Feature	Your Benefit
Turbocor-Optimized Algorithms	Design chillers that fully leverage the part-load efficiency and reliability of magnetic bearing compressors.
Centralized PIM Database	Eliminate hours of manual data entry and verification. All technical information is authoritative and up-to-date.
Automated Report Generation	Produce client-ready technical submittals and performance summaries in minutes, not hours.
Integrated System Analysis	Confidently predict real-world performance and energy consumption, strengthening your technical proposals.

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TURBOCHILL Software Design VS. Traditional Software Design

Traditional Method	TURBOCHILL
3-5 days design	4-8 hours
15% error risk	<1% errors
5 different software	All integrated

MARKET-DRIVEN INNOVATIONS

- **First design suite featuring AI-based cooling load prediction.**
- **Patented algorithms** optimizing efficiency at partial loads.
- **Cloud-based collaboration** among global engineering teams.

ARTIFICIAL INTELLIGENCE INTEGRATION

The embedded AI assistant supports design offices in several key areas:

- **Automatic creation** of technical and marketing texts for catalogues.
- **Instant multilingual translation** of component and system descriptions.
- **Consistent, error-free generation of reports** and documentation.

AI integration enhances productivity and accelerates project delivery, while ensuring coherence across all communication materials.

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TURBOCHILL Software Design VS. Traditional Software Design

GLOBAL FLEXIBILITY

- **Multilingual Environment-** Engineers can operate the full interface in multiple languages with automatic localization of terms, documentation, and catalogues.
- **Metric and Imperial Units-** Seamless unit adaptability ensures straightforward project adaptation for any regional standard or specification.
- **User Roles and Access Management-** TURBOCHILL offers configurable permissions for engineering, sales, and management users:

  Technical engineers: design, simulation, and data import.
  Sales engineers: selections, approval, and project quotations.
  Marketing: editing descriptions, pricing, and product content.
  Administrators: full control and data governance.

This structured system guarantees operational security, version control, and collaboration efficiency.

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TURBOCHILL PRECISION, EFFICIENCY, INTELLIGENCE

Empower your engineering team with the most advanced tool for designing Turbocor chillers, built to shape the future of high-performance cooling systems in data centers and industrial environments.

Data Update Management

The system manages component information updates through a controlled and structured process:

Controlled Import:

Component data is imported using specialized tools integrated within the software. These tools are accessible exclusively to users with specific roles and appropriate permissions, ensuring that only qualified personnel can modify critical information.

Version Control:

The software automatically maintains a version registry for each component. This versioning system allows to:

- Track all changes made over time
- Compare different data versions
- Restore previous versions when necessary
- Maintain a complete audit trail of modifications

Approval Process:

The introduction of new data or modifications to existing data follows a structured approval workflow. This ensures that every update is verified and validated before being definitively applied to the system, reducing the risk of errors and maintaining data integrity.

This approach ensures quality, traceability, and security in component information management.

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Web-based Software

TURBOCHILL is a fully web-based software engine developed within the IDEA Suite HVAC ecosystem.

Security and Availability (Cloud Trust)

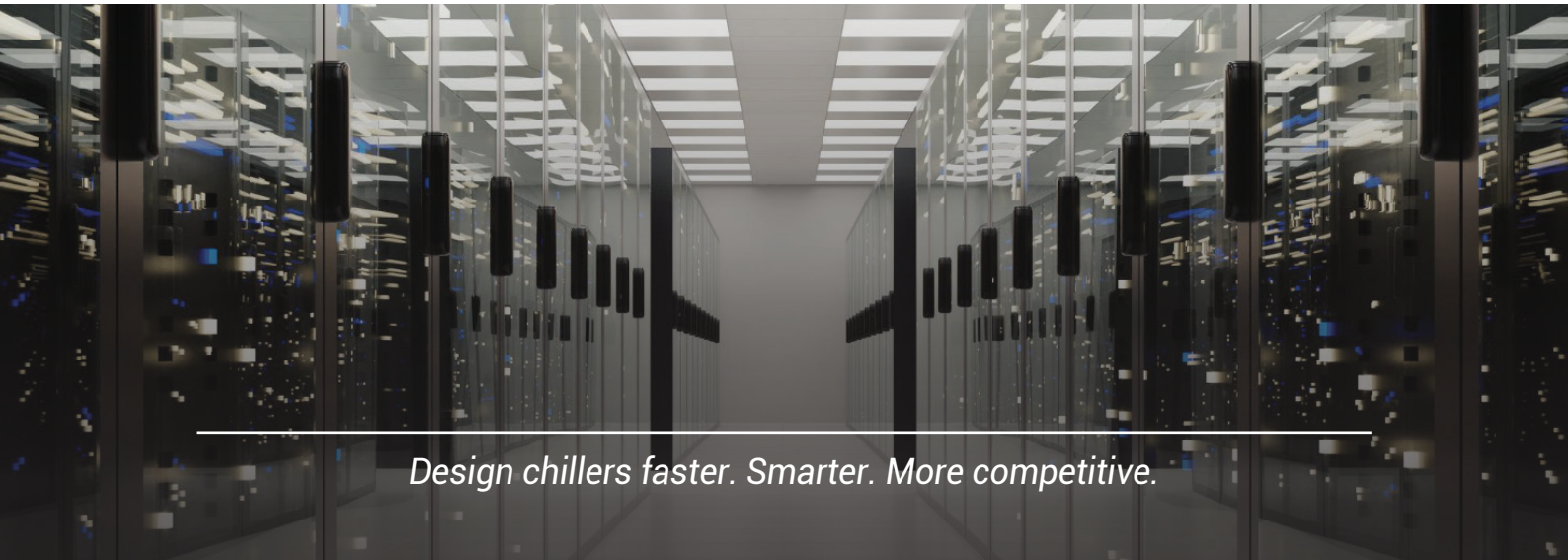
All projects are securely stored in the cloud with version control, encrypted data exchange, and automatic backups.

Certifications and Reliability

Validated according to ASHRAE and Eurovent methodologies, ensuring calculation reliability and compliance with international standards.

Training and Technical Support

Comprehensive onboarding, training, and dedicated technical support ensure your team achieves maximum productivity from day one.



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READY TO TRANSFORM YOUR DESIGN PROCESS?

Move beyond outdated design methods.

With TURBOCHILL and the IDEA SUITE HVAC, you are not just designing a chiller, you are engineering a validated, optimized, and fully documented system with unparalleled efficiency.

Take the next step in engineering excellence.

Contact us today for a personalized demo and see how TURBOCHILL can streamline your workflow and elevate your chiller designs.

TURBOCHILL SOFTWARE of the IDEA SUITE HVAC Ecosystem.

Engineering Confidence. Delivering Efficiency.

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