

Performance Testing and Evaluation Services

UL Solutions operates HVACR laboratories all over the world, helping you to reach new markets



Safety. Science. Transformation.™

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Working with UL Solutions



Our dedicated heating, ventilation, air condition and refrigeration (HVACR) experts and testing laboratories are accredited to deliver performance testing for HVACR equipment to regional, national and global industry standards throughout the Americas, Europe, the Middle East and Asia.



Our services are designed to support your business and sustainability goals, help you better understand your product's performance characteristics, earn key energy efficiency certifications and differentiate your products in the marketplace.



Our team of engineers will collaborate with you throughout the process, and we are here to discuss your unique requirements and help you unlock the full potential of your HVACR product lines.

Overview of performance testing services

Performance testing encompasses a wide range of services that measure performance characteristics and verify specific claims or requirements. Although standards vary across regions, UL Solutions will work with you to develop your testing plan based on market entry criteria.

- Control verification procedure (CVP)
- Ecodesign for Sustainable Products Regulation (ESPR)
- Energy efficiency testing
- Load-based testing (LBT)
- UL Marketing Claim Verification
- R&D testing
- Sound testing

HVACR product categories

The HVACR industry is complex, with each category carrying specific requirements as well as the need for nuanced understanding of the requirements and technology drivers. Leverage our dedicated HVACR team of experts as you develop new products and build your go-to-market plans.

- Air cleaners, fans/ceiling fans, blowers, dehumidifiers
- Air conditioners (portable, room, central, computer rooms and data centers, variable refrigerant, water-cooled)
- Boilers and furnaces
- Electric motors and components
- Heat pumps and water heaters/heating equipment
- Refrigeration equipment and walk-in coolers and freezers

North American HVACR



We leverage our deep technical expertise to test, assess and certify specific requirements against leading HVACR performance standards and regulatory frameworks.

Common North American standards related to HVACR categories include:

Standards organization	Applicable standards
Air-Conditioning, Heating, and Refrigeration Institute (AHRI)	AHRI 210/240, AHRI 310/380, AHRI 320, AHRI 325, AHRI 330, AHRI 340/360, AHRI 365, AHRI 366, AHRI 390, AHRI 410, AHRI 430/431, AHRI 550/590, AHRI 551/591, AHRI 810, AHRI 820, AHRI 910, AHRI 1160, AHRI 1161, AHRI 1200, AHRI 1230, AHRI 1320, AHRI 1360
American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE)	ASHRAE 128, ASHRAE 133, ASHRAE 146, ASHRAE 190, ASHRAE 13256-1, ASHRAE 13256-2
Canadian Standards Association (CAN/CSA)	CAN/CSA C656, CAN/CSA C743, CAN/CSA C746, CAN/CSA C749

Plano Center of Excellence

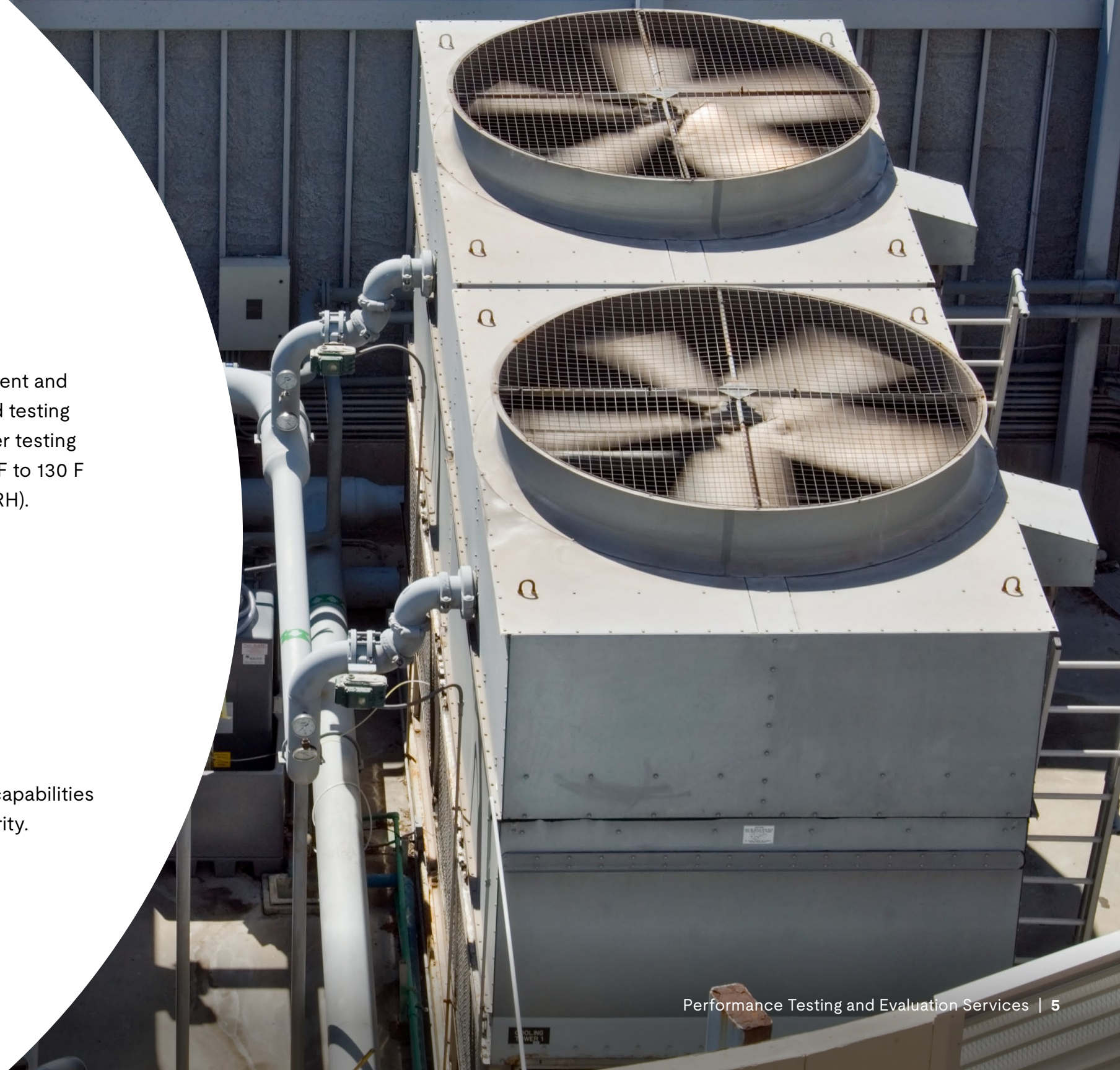
Our expanded Performance Center of Excellence in Plano, Texas, supports future-ready innovation for energy-efficient, low-GWP refrigerant systems and high-efficiency commercial heat pumps and air conditioners.

We demonstrate our commitment to the industry through our advanced equipment and laboratory space, combined with our deep engineering expertise. Our advanced testing for energy efficiency measurements includes psychrometric chambers that offer testing for HVACR systems up to 30 tons, with indoor side room temperatures from 40 F to 130 F and outdoor temperatures from -20 F to 130 F, with humidity control (20%-90% RH).

Benefits of working with our Plano laboratory include:

- Proven capabilities and expertise in control verification procedure (CVP)
- Expertise in load-based testing
- Fast turnaround times to support product development
- Energy efficiency testing according to AHRI 210/240, AHRI 550/590
- Variable refrigerant flow (VRF) according to AHRI 1230
- Private HVACR performance testing and R&D testing

The expanded testing performance laboratory complements our safety testing capabilities in the region, so ask about bundled test plans for safety, performance and security.





Control verification procedure (CVP)

The inclusion of variable speed compressors and fan motors in HVACR equipment brings the potential for significant energy efficiency gains. However, current performance testing methods (static testing) require that the controls of the HVACR equipment remain constant for testing. CVP has been developed as a way to verify that the controls can operate as intended under their native control algorithms during regulatory testing.

UL Solutions' advanced HVACR testing facility in Plano is uniquely positioned to support CVP testing and advance the HVACR industry by offering dedicated infrastructure, technical expertise and scalable performance testing for air-conditioning products.

Load-based testing

Using LBT, integral equipment controls are allowed to operate as they were designed by the equipment manufacturers. This dynamic testing approach involves emulating a building's sensible and latent loads by adjusting the temperature and humidity setpoints of the psychrometric chamber reconditioning system.

This method differs sharply from historical performance testing procedures, in which the controls of the equipment are locked while the compressors and fans are forced into fixed speeds (e.g., static testing).

Adopters of LBT recognize that performance metrics from the CSA SPE-07 are more representative of how the equipment operates when installed in the field, as compared to the energy efficiency metrics that have historically been used by regulatory agencies.



HVACR for EMEA



Across Europe and the Middle East and cross-regionally, our test reports can help demonstrate compliance and build customer confidence in your HVACR products. We are committed to providing performance testing service laboratories around the world, adapting to customer testing needs for emerging HVACR market trends and energy efficiency requirements.

Standards organization	Applicable standards
European Standards (EN)	EN 16825, 16838, 16901, 16902, 14511, 14825, 16147
International Electrotechnical Commission (IEC)	IEC/EN 62552-1/2/3
International Organization for Standardization (ISO)	ISO 5151, 13253, 15042, 16358-1/2/3, 3744, 4735 EN ISO 22041, 22044, 23953-2
Saudi Standards, Metrology and Quality Organization (SASO)	SASO GSO ISO 5151, 13253 SASO 2663, 2874 QS SASO 2681, 2682, 2663
Emirates Authority for Standards and Metrology (ESMA)	UAE.S 5010-1/5, 5151, 13253, 15042
Abu Dhabi Quality and Conformity Council (QCC)	QCC-PCS-ASP017.01
World Health Organization (WHO)	WHO Performance, Quality and Safety (PQS)

UL Solutions can also provide ISO 17025-accredited test reports for use in declaring EU energy efficiency values for compliance with European energy label rating criteria and ESPR.

HVACR Performance Laboratory in Carugate, Italy

To meet the growing demand in Europe, we have expanded our testing facilities in Carugate (Milan, Italy), where the main product focus is air-to-water heat pumps for residential and light commercial settings.

Services at our Carugate laboratory include:

- A wide range of testing to support energy efficiency and performance metrics in a competitive market focused on energy transition
- Advanced sound testing capabilities using hemi-anechoic chambers (for heat pumps and appliances such as clothes washers/dryers, dishwashers, microwave ovens and ice makers)
- Expert guidance to support product development and emerging technologies
- Security testing for HVACR products, including electromagnetic compatibility (EMC) and the Radio Equipment Directive (RED)
- Complementary safety testing, including flammable refrigerant leakage testing and sparking/arcing component testing according to IEC/EN 60335-2-40 and EN 378-2



UL Solutions is an empowered KEYMARK certification body authorized to assess and certify heat pumps, dual-service heat pumps and hot water heaters for compliance with European Standards. Leverage our expertise in the region and our capabilities that make us a single-source provider for the HVACR industry.

Asia Pacific, ASEAN and ANZ HVACR



Our performance facilities in mainland China, Thailand and India provide testing and certification services that HVACR manufacturers rely on to reach global markets. The energy efficiency requirements, CVP testing and combined safety and performance testing for North America, Latin America, the Middle East, Europe, and Australia and New Zealand (ANZ), can all be fulfilled from our Asian laboratories.

In addition to American, EMEA and international standards, we can also provide testing and certification to regional standards for Asia.

Standards organization	Applicable standards
Standardization Administration of China (SAC)	GB/T 7725, GB/T 8059
Thai Industrial Standards Institute (TIS)	TIS 2134-2553, TIS 1155-2557, TIS 2186, ISO 5151, ISO 16358
Japanese Industrial Standards (JIS)	JIS C9612(room)/JIS B8616(Package)
Korean Agency for Technology and Standards (KATS)	KS C9306
Bureau of Indian Standards (BIS)	IS 1476 (Part1):2000, IS 15750:2006, ISO 22044, IEC 62552, WHO PQS
Malaysian International Standards Organization (ISO)	MS ISO 5151
Indonesian National Standardization Agency (BSN)	SNI 19-6713, SNI 04-6958
Philippine National Standards (PNS)	PNS 396-1, PNS 240, PNS ISO 5151, PNS ISO 16358-1
Vietnamese National Standards (TCVN)	TCVN 7830, TCVN 6576, TCVN 10273-1, TCVN 10273-2, TCVN 10273-3
National Environment Agency (NEA)	NEA MEPs (Singapore)
Australia and New Zealand (AS/NZS)	AS/NZS 3823



HVACR Performance Laboratory in Asia

From air enthalpy equipment to refrigeration, calorimeter and climatic chambers, our expert engineers are fully equipped to test products according to the major HVACR standards of AHRI, ASHRAE, ISO, EN/IEC and others that different regions require, as well as newer methodologies, such as CVP. Work with our nearest China office to explore global market access and perform evaluations with convenient local testing.

With China locations in Suzhou, Guangzhou, Zhongshan and laboratories in Gurugram, India, and Samut Prakan, Thailand, our HVACR performance facilities fully cover the growing demand for Asia Pacific, ASEAN and ANZ countries that wish to sell in both local and international markets.

Connect with our local team to discuss your project needs and the opportunity to bundle HVACR safety and performance testing.

Verified
Marketing Claim



UL Marketing Claim Verification

The UL Verified Mark delivers confidence to consumers that a brand's marketing claim is accurate, truthful and credible. UL Solutions provides a searchable database of Verified claims by brand, company name, product name and the claim's unique identifier that helps differentiate HVACR products in a market that's crowded with performance claims.

Benefits of verification include:

- Building credibility
- Bringing innovative products to market quickly
- Elevating your brand
- Leveraging a Mark that's recognized worldwide



To learn more about our services or ask about other performance testing options, visit us at [UL.com/HVACR](https://www.ul.com/HVACR) or contact us today.

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