

UL Solutions for HVAC



Safety. Science. Transformation.™



HVAC testing and certification

The Heating, Ventilation and Air Conditioning (HVAC) industry is changing faster than ever before as companies consolidate and go global in the race to win market share.

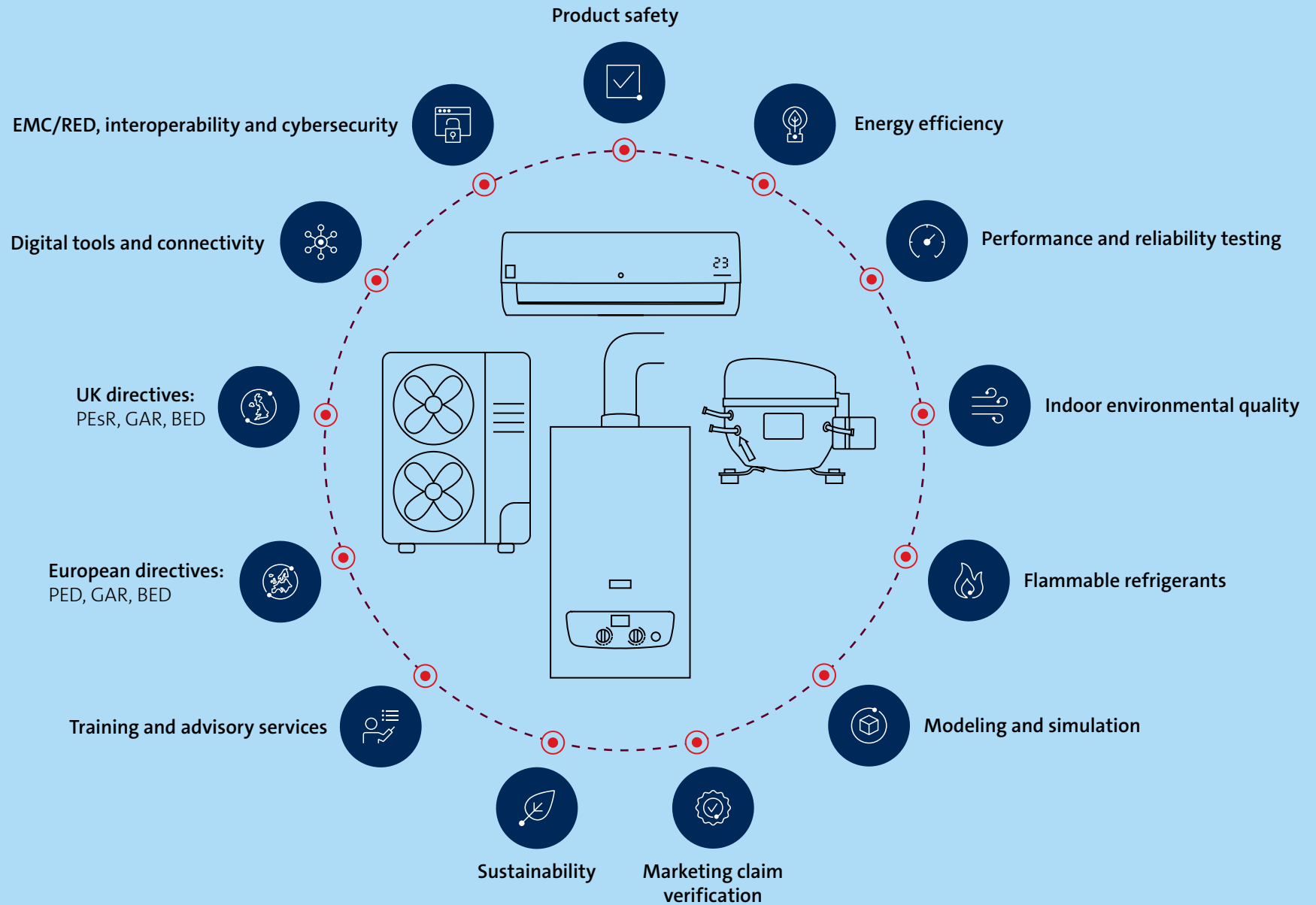
Our world offers opportunities to curb climate emissions that governments regulate and eco-conscious consumers demand. Amid these trends, HVAC brands must offer unique product features while maintaining strict standards of safety, performance, sustainability and security, as well as compliance with global regulations.

As a global safety science leader with broad business intelligence and a deep understanding of the regulatory landscape, UL Solutions is a trusted partner to HVAC manufacturers, helping you demonstrate the safety and compliance of your products. We deliver high-quality and high-performance services that help turn technology trends into a competitive advantage to get your innovations to market faster and leverage one of the most recognized Marks in the world to build trust and confidence with your customers.

UL Solutions delivers testing, inspection and certification services, together with software products and advisory offerings, that support our customers' product innovation business growth, to navigate global markets and complex supply chains, and grow sustainably and responsibly into the future.

UL Solutions provides a team of local experts knowledgeable on the latest standards, including UL and International Electrotechnical Commission (IEC) standards. HVAC manufacturers can rely on our expertise in the industry and the connection with industry associations, such as the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), the Air Conditioning, Heating, & Refrigeration Institute (AHRI), and Eurovent.

UL Solutions for HVAC



Go farther and faster with UL Solutions



Reach global markets faster.

As global compliance experts, we can help you streamline your testing and certification schedule and enable you to access world markets using one local testing laboratory.



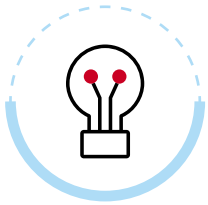
Work with a leading issuer of the IECCE CB certificates.

We are an active driver in international committees of standards harmonization. Benefit from our local testing services and a single access point for international certifications. Use our CB Test Reports to obtain CB Certificates in CB Scheme member countries and many other nonmember countries.



Reduce time-to-market and costs.

Achieve cost and time savings by collaborating with a single service provider for multiple certifications. Our broad portfolio of services enables us to offer gas-fired and electrical safety testing, international certification, electromagnetic compatibility (EMC) assessment and energy certifications via a single product submittal.



Get your new product innovations ready for connected ecosystems.

Meet regulatory and industry requirements for wireless performance, connectivity and cybersecurity through independent testing and certification. We offer comprehensive product development support, including technical services, prototype reviews and reliability testing to help you bring new products to market quickly.



Benefit from local expertise.

Get specialized training and insights in your language. Benefit from a wide range of online and on-site training specifically developed for your engineers, product developers and compliance professionals. On-site training will typically include valuable hands-on time with your products, so you know that interpretations and feedback will be timely, accurate and impactful.



Use one trusted contact for all your business needs.

We offer support for every step of your product development journey — including risk analysis (mechanical risk, electric shock, fire risk, flame risk, and explosion risk associated with leakage of a combustible refrigerant in confined spaces), quality assurance, regulatory compliance reviews, energy efficiency testing and environmental certifications.

Your trusted partner to access a connected global market

We help you navigate the complexity of an ever-changing regulatory landscape and access major markets. We can adapt our services to best suit your strategy and bundle global services and specific training, product safety and performance, energy efficiency and labeling, EMC and wireless and cybersecurity services.



Last updated September 2022

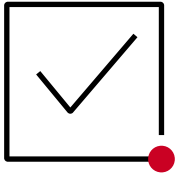
This information is only a selection of some of the most popular markets and marks for guidance and illustration purposes only. The map represents some of the marks and certificates that UL Solutions may be able to assist you in obtaining if your products meet all the applicable requirements. Mark and certificate requirements may vary from product to product and region to region. For the most updated information regarding your specific needs for market access, please contact your local UL Solutions representative.

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Global Market Access

Receive the latest updates on [UL.com/market-access-portal](https://www.ul.com/market-access-portal).





Getting ready for global markets

Product safety testing and certification services

When launching a new product, you want to be sure that it complies with market requirements. As a leading expert in safety science, UL Solutions can provide certification and testing as well as market access advisory and training services for your global access needs. In this way, we can help you understand your compliance and market access requirements.



UL mark

UL Marks appear on billions of products globally, they serve as a recognized symbol of trust in our customers' products and reflect an unwavering commitment to advancing our safety mission.

The UL Mark demonstrates that we have evaluated and tested representative samples of your product and determined that the product meets specific, defined requirements. Throughout the world, we are the only certification organization authorized to issue the UL Mark.



IECEE and CB SCHEME

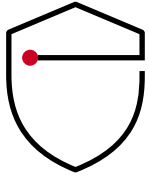
When you want to export an electrical or electronic product globally, the CB Certificate and Test Report is one of the key elements to consider. The IECEE CB Scheme is an international system for mutual acceptance of test reports and certificates dealing with safety. The International Electrotechnical Committee for Conformity Testing to Standards for Electrical Equipment (IECEE) oversees the CB Scheme. UL Solutions has four National Certification Bodies (NCB). NCBs operate national certification schemes for electrotechnical equipment and components and issue CB Test Certificates. CB Test Certificates are based on Test Reports. We conduct testing at one of our many CB Testing Laboratories (CBTLs).



CE and UKCA marking:

Conformité Européenne (CE) marking is essential in the European Economic Area (EEA). The CE marking demonstrates that your product complies with all the applicable EU directives and regulations. Although the CE marking is a self-declaration, understanding how to navigate complex European mandatory CE marking requirements, as well as voluntary certification programs, can help speed up your time to market. In addition, to get the CE marking on HVAC products according to EMC and RED directives, it is necessary to have the products tested by a Notified Body.

With our extensive knowledge of European and U.K. standards, we support you in testing your products and compiling the associated documentation required to declare CE and UKCA marking compliance. UL Solutions is a Notified Body for CE marking and an Approved Body for UKCA marking. We offer flexible, customized services to help you fulfill Declarations of Conformity (DoC) and Technical Documentation Files (TDF).



Common standards

These standards are representative of the types of safety and other standards applicable to HVAC products.

Europe	North America
<ul style="list-style-type: none">• Low Voltage Directive 2014/35/EU (LVD) – for appliances under scope of EN 60335• Gas Appliance Regulation 2016/426/EU (GAR)• RoHS – Directive 2011/65/EU• Machinery Directive 2006/42/• ATEX Directive 1999/92/EC• IEC/EN 60335-2-40, Standard for Safety for Household And Similar Electrical Appliances – Safety – Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers, Edition 7.0, Issue Date May, 2022	<ul style="list-style-type: none">• ANSI Z21.58_2018_CSA 1.6_2018 - Outdoor cooking gas appliances• UL 295, the Standard for Commercial-Industrial Gas Burners• ANSI Z21.10.1-2017 - Gas water heaters• ANSI Z21.13-2017 - CSA 4.9-2017 - Gas-fired low pressure steam and hot water boilers• ANSI Z83.11-2006 - CSA 1.8-2006 - Gas Food Service Equipment• CSA/ANSI Z21.1-2018 - CSA 1.1-2018 - Household cooking gas appliances• UL 1482, the Standard for Solid-Fuel Type Room Heaters• UL 2162, the Standard for Commercial Wood-Fired Baking Ovens – Refractory Type• UL 60335-2-40/CSA C22.2 No. 60335-2-40, the Standard for Safety for Household And Similar Electrical Appliances – Safety – Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers, Edition 3, issue date Nov. 1, 2019• UL 1995, the Standard for Heating and Cooling Equipment, Edition 5, issue date July 31, 2015, revision date Aug. 8, *After Jan. 1, 2024 all products and changes to products shall be evaluated with UL 60335-2-40 latest edition.• CSA C22.2 No. 236-15, Heating and Cooling Equipment, Edition 5, issue date July 31, 2015• Product certification to UL 60335-2-34, the Standard for Household and Similar Electrical Appliances - Safety - Part 2-34: Particular Requirements for Motor-Compressors



Flammable refrigerants

Low GWP transition services

Manufacturers now face new and complex development challenges as they consider integrating lower Global Warming Potential (GWP) refrigerants into their product mix. UL Solutions, with a full portfolio of advisory, benchmarking and certification services, helps you mitigate risk, reduce product development time and achieve design goals within your project budget.

We help customers navigate the changing landscape of low GWP compliance to gain access to new markets and offer safer products around the globe. UL Solutions is an expert in flammable refrigerants with over 100 years of experience in fire safety. We can offer a broad range of services for customers during their product development or certification phase with flammable refrigerants, such as:

Advisory and training services

- Flammable refrigerant basics and mitigation techniques
- Component certification
- Recent adaptations of flammable refrigerants requirements
- Pressure Equipment Directive (PED) evaluation for compressors and refrigeration pressure vessels
- Training for laboratory technicians on proper use and hazards of flammable refrigerants

Benchmarking services

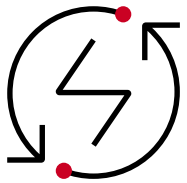
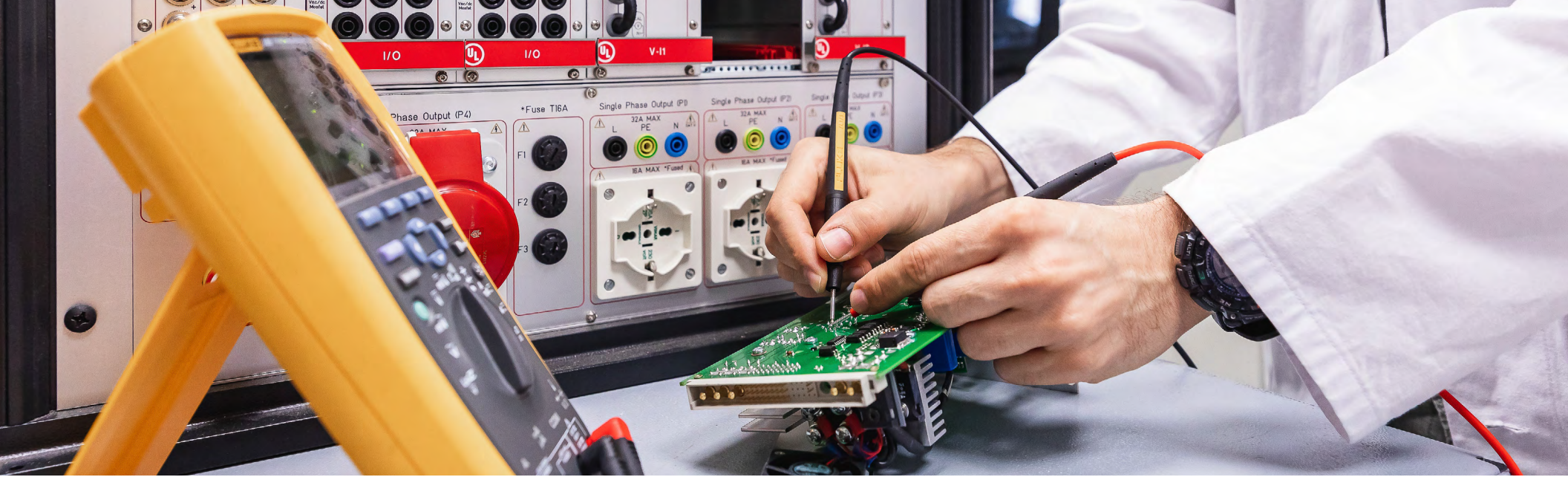
- Preliminary refrigerant leak testing
- Component testing
- Mitigation advisory services
- Computational fluid dynamics (CFD) modeling
- Full-scale release testing
- Evaluation of mitigation techniques in the presence of refrigerant
- Fatigue pressure test
- Global regulatory advisory for systems containing flammable refrigerants

PED and PE(s)R

The Pressure Equipment Directive (PED) (Directive 2014/68/EC) is a mandatory EU regulation covering the design, manufacture and conformity assessment of pressure equipment and assemblies.

UL Solutions also supports United Kingdom Conformity Assessed (UKCA) marking required for the Pressure Equipment (safety) Regulation (PE(s)R), which is the British version of the PED. As a Notified Body in Italy and an Approved Body in the U.K., UL Solutions has expanded its combined scope so that our laboratories can support local customers with all necessary marks.

Mildly flammable (A2L) and flammable (A3) refrigerants are considered harmful gases under the PED. This is why products that have been using nonflammable A1 refrigerants and will now move to A2L or A3 refrigerants might change to a higher PED category, requiring new PED certification by a Notified Body. UL Solutions, as a Notified Body under Directive 2014/68/EU, can provide certification around the world for pressure equipment and assemblies.

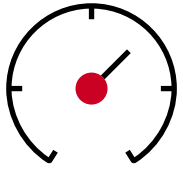


Energy efficiency testing and certification services

As the global demand for energy consumption continues to accelerate, the race to build more energy-efficient products is intensifying and spreading rapidly around the world. South Africa, Egypt, Israel, and Saudi Arabia, among others, are adopting new energy labeling regulations that complement those already in place in Europe and North America (e.g., Energy Star®, for which UL Solutions is a full-service partner).

HVAC manufacturers, in particular, face the pressure to meet increasingly demanding efficiency regulations, and UL Solutions can support them. HVAC product labeling regulations themselves are evolving. While previously affecting products in general, they are now being extended to commercial and professional equipment.

- **North America: ENERGY STAR®**
- **Middle East/Africa: national energy label scheme**
- **Europe: UL GS Mark**
- **Directive No. 92/42/EEC and Regulation (EU) No. 813/2013 (BED)**
- **Ecodesign Requirements – Directive 2009/125/EC**



UL Solutions performance services

When you need to test a product to specific, identified internal protocols or identify and evaluate the performance of new products, our team of highly specialized engineers can assist you with their extensive experience in the HVAC industry. You can also benefit from a range of training and advisory services developed for certification and testing engineers, product developers and compliance professionals. We provide advanced performance engineering services to develop product specifications and test plans and accurately execute test procedures so you can go to market with the confidence that your products will meet consumer expectations.

Services include:



**Competitive
benchmarking**



**Performance
improvement**



**Marketing claim
verification**



**Test protocol
creation**



**Consumer
evaluation**

UL Solutions also provides fully customized services. Our skills, techniques, tools and processes — developed and honed by decades of reliability experience with Fortune 500 companies — help you reduce warranty costs and establish a sustainable competitive advantage in the marketplace. These services include:

- Reliability modeling
- Test plan creation
- Component testing
- Root cause analysis
- Corrective action
- Warranty analysis and projections
- Test fixture design/fabrication
- Retail testing
- Package testing

UL Energy Verification Mark



It's important not only to say your products are energy efficient but also to help consumers believe your energy efficiency claims. Our UL Energy Verification Mark indicates compliance with energy efficiency standards.

The UL Energy Verification Mark addresses compliance with testing regulations/procedures of any energy efficiency scheme, e.g., DOE, European Energy Efficiency (EE) Label, other mandatory or voluntary EE schemes. The Mark adds trust and confidence in your energy efficiency testing and claims because it comes from a trusted, independent third party: UL Solutions.

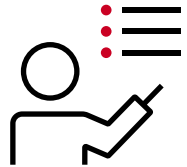
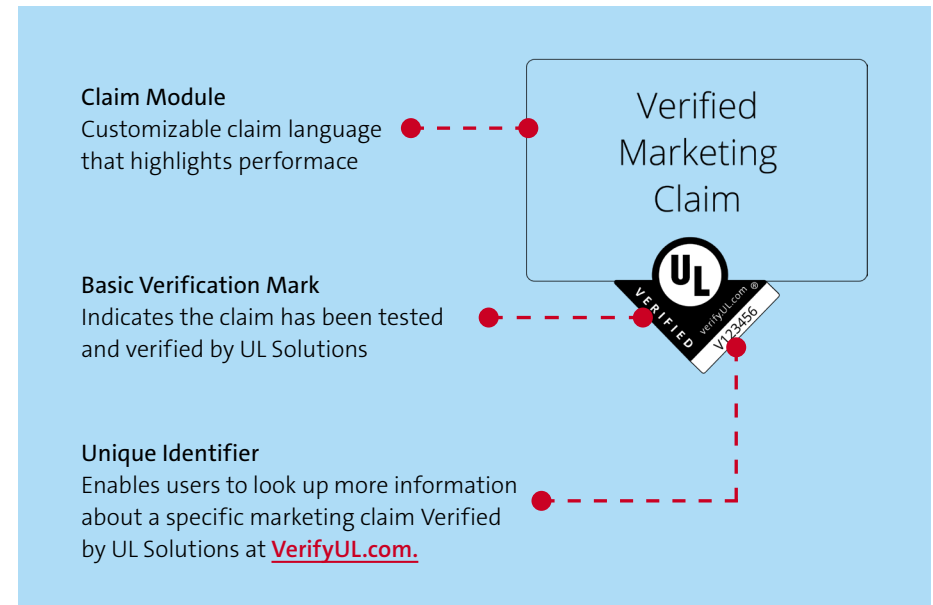
Marketing Claim Verification

In today's highly connected, transparent marketplace, verification of marketing claims plays a crucial role in the decision-making process of buyers and consumers. Performance verification testing opens a world of new opportunities that can help manufacturers gain an advantage over their competition by bringing credibility to a specific promotional statement.

Our Marketing Claim Verification program determines the accuracy of marketing claims — thanks to our science-based, customized assessment — and delivers the confidence that your marketing claim is credible. We can create a Verification program for a product, process, system or facility. We can use various published standards or requirements for evaluating a marketing claim.

It's time to add credibility to your claims with the UL Verified Mark.

To learn more, visit [VerifyUL.com](https://www.verifyul.com).



Advisory services

Gain true insights to make your product development faster and more efficient. In today's global economy, organizations can gain a true competitive advantage by accelerating product development, effectively managing safety, compliance and regulatory risks, and accessing new markets.

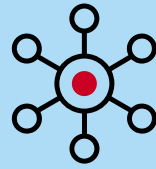
Our advisory services deliver end-to-end solutions that empower customers to identify new opportunities, fully leverage their core competencies and achieve their business objectives. Customers leverage UL Solutions expertise regarding industry standards to develop strategies aimed at reducing development time and increasing speed to market.



A smart ecosystem

Known as the Internet of Things (IoT), a new generation of network-connected products has raised consumer expectations in terms of a product's capability and functionality. To remain competitive, manufacturers may need to integrate complex new technologies into their product designs. At the same time, they must meet both performance expectations and compliance standards while minimizing potential cybersecurity risks.

Through third-party testing for connectivity, interoperability and cybersecurity, you can bring your products safely into smart ecosystems while your customers and consumers can be confident that your product has undergone rigorous evaluation for security flaws and performs as expected in today's connected ecosystem.



UL Solutions connectivity and interoperability services

Connectivity is a challenge shared across every industry with connected and smart products. Companies that prioritize a continuous comprehensive connectivity strategy and consider wireless interoperability, cybersecurity and EMC/radio will have a competitive advantage in the HVAC industry.

Our facilities offer comprehensive testing, certification and advisory services to help evaluate if products connect to other devices and function in the way consumers expect. We offer services for the following:

- Software performance
- Connectivity of wireless products
- Interoperability
- Usability

We also support such technologies as:

- Bluetooth
- Wi-Fi
- Thread
- Zigbee
- 5G
- Open Connectivity Foundation (OCF)
- Radio Frequency (RF)
- Works with Alexa (WWA)
- Open ADR
- CTA-2045





EMC and RED testing services

Our global network of dedicated EMC testing facilities provides comprehensive and cost-effective assessments of HVAC products that must comply with EMC regulations. Our state-of-the-art facilities offer an efficient EMC testing service to help meet your time-to-market requirements. We can customize the EMC testing process and documentation to your specific requirements by using automated software that improves process efficiency, analyzes results and reduces test cycles and costs.

Our EMC/radio laboratories are recognized:

- Notified Body for EMC (2014/30/EU) and RED (2014/53/EU) for Europe
- Telecommunication Certification Body (TCB) for the U.S. Federal Communications Commission (FCC)
- Conformity Assessment Body (CAB) – Notified Body for the European Union
- CTIA Authorized Testing Lab (CATL) 7
- Foreign Certification Body (FCB) for Canada



UL Solutions cybersecurity services



Cybersecurity for connected products is a major concern for HVAC products manufacturers, suppliers and end users. At UL Solutions, our Marketing Claim Verification Internet of Things (IoT) Security Rating is a potent security verification and labeling solution for consumer IoT products. Our goal is to make security transparent and accessible while supporting consumers in making purchasing decisions. The IoT Security Rating offers manufacturers and distributors a means to demonstrate that their products deliver on their IoT security claims. The verified IoT Security Rating Mark empowers you to differentiate your product in the marketplace. In the security sector, we provide additional services and can customize them according to the specific needs of each manufacturer.

Advisory and training services

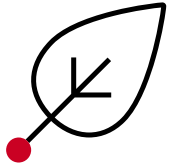
- Training on security by design
- Secure Development Lifecycle (SDL) gap analysis
- Security framework assessment
- Supplier Cyber Trust Level

Certifications

- IoT Security Rating
- UL 2900, the Standard for Software Cybersecurity for Network Connectable Products, Part 1: General Requirements
- IEC 62443
- UL Solutions Cybersecurity Assurance Program (UL CAP)
- Interoperability with Amazon Alexa Voice Service (AVS)

Testing

- Penetration testing
- Vulnerability evaluation
- White box
- Black box
- Device-to-device
- End-to-end
- Out-of-box experience



UL Solutions sustainability services

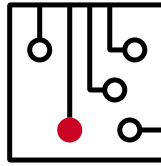
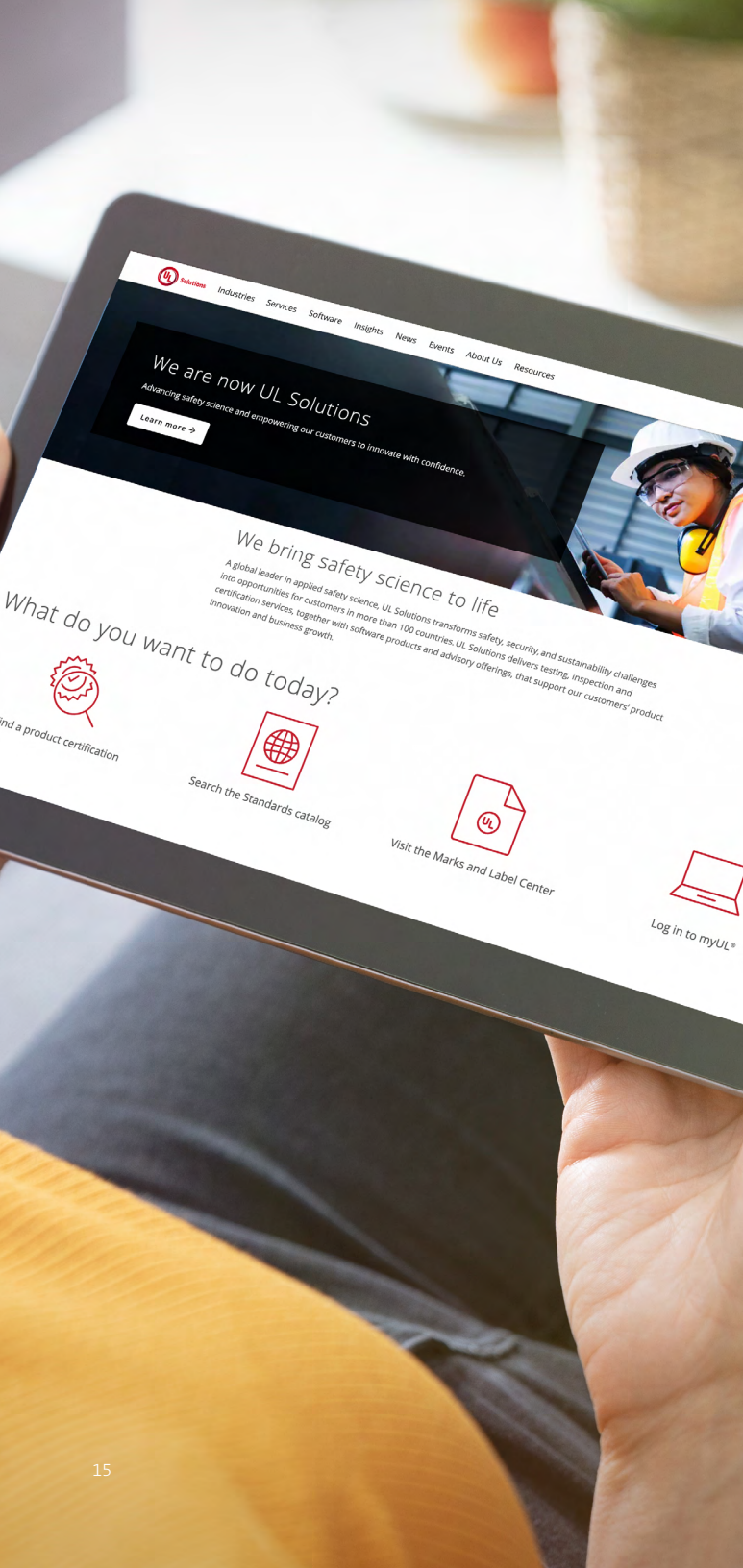
Our sustainability services give companies control of their green strategies, helping transform their environmental leadership into greater market share, consumer trust and increased profitability. From helping establish clear strategies to validating green efforts and achievements, we empower your communication, innovations, progress and performance in the market.

Environmental Claim Validation (ECV) provides manufacturers with credibility for their environmental sustainability claims. Our publicly available sustainable product database, UL SPOT, features validated products. Our sustainability solutions include Zero Waste to Landfill, Turbo Carbon™, sustainable packaging and UL Solutions 360 Supply Chain Management software.

Our services include:

- Evaluating corporate-branded sustainability portfolios or programs, e.g., waste diversion programs.
- Promoting the integration of sustainable thinking into new product development processes through staff training.
- Validating innovative sustainability claims.
- Establishing sustainability strategies to achieve corporate and environmental goals.
- Enabling sustainable sourcing for retailers and buyers.
- Linking product or portfolio sustainable value propositions to customer needs, enabling product differentiation and selection.





UL Solutions digital services

At UL Solutions, our digital tools and services provide HVAC companies with a secure source for access to UL Solutions projects, documents and services.

myUL Client Portal

myUL, our project management platform, offers you easy access to in-depth information that empowers you to positively impact your bottom line. By providing you with better visibility and insight, our client portal can help you advance the pace of innovation, drive growth and increase speed to market.

With myUL, you can:

- Gain full visibility into quotes, orders and projects.
- See when we received product samples and when they have been returned, picked up, destroyed or archived.
- View UL Solutions reports, procedures and global certifications.
- Identify the companies responsible for your products.
- View the date, factory representative, type of product inspected, type of business, inspection center and any variation notices linked to your reports.

UL Product iQ®

Promote or locate UL Certified products with a certifications platform that contains UL Listed, Classified or Recognized products and components. UL Product iQ marries the longstanding UL Solutions certification information relied upon by millions of users with the intuitive design and user-friendliness of a modern search engine. Product iQ creates premium value for users by helping them identify safer, compliant products and promote their UL Certified products to potential buyers.

Learn more about UL Solutions services for HVAC products or [contact us](#) for more information



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