CHILLER & HEAT PUMP PERFORMANCE

TEST LABORATORY and RESEARCH CENTER

"Each kW is under control!"

Discover Our Innovative Chiller & Heat Pump Test and Validation Laboratory!

Untes Chiller and Heat Pump Performance Test Laboratory and Research Center provides its customers and business partners to eliminate all the risks at start up, know in advance the unit performance at actual operating conditions, and verify unit limits at severe operating conditions. Thanks to the tests applied in research center, the operating performance of the units is measured in a comprehensive manner and fault management functions are optimized before installation.

Eliminate all the risks at start up

Know in advance how the unit will operate at actual operating conditions

Verify unit limits at severe operating conditions

Your Buildings Deserve Our Innovative Air Conditioning Solutions

In order to increase their productivity and efficiency over time, more investors focus on their core business area. Our business partners trust us in Increasing Energy Efficiency, Lowering Initial Investment and Lowering Operating Costs, because Untes offers a unique experience to provide innovative & integrated solutions for them to use energy more Reliable, Efficient and Productive.

Post Production Performance and Reliability Testing Phases

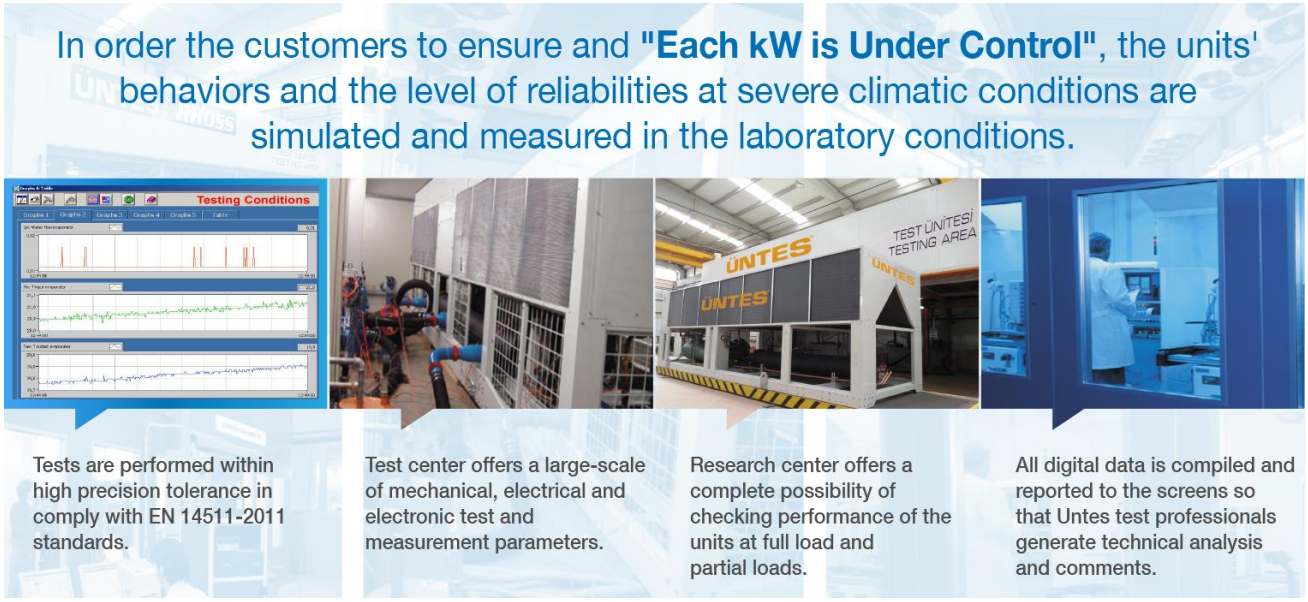
In order the customers to ensure and **"control each kW"**, the units' behaviors and the level of reliabilities at severe climatic conditions are simulated and measured in the laboratory conditions.

- ✓ **Leakage Test Phase:** Leakage test is performed before performance and reliability tests to ensure the tightness of refrigerant circuits. All connection points of refrigerant circuits are guaranteed to be %100 tight by this test.
- ✓ **Test Preparation Phase:** All units, which passed the leakage test successfully, are located into test center for; function, performance and safety tests. Sensor and sensor connections are prepared for the next test phases.

- ✓ **Full and Part Load Testing Phase:** All actual operating conditions, which are defined to simulation center (50°C external temperature, -5°C cold water and water inlet parameters, operating pressures, compressor load changes, etc.), full and partial load performance are measured.
- ✓ **Failure Diagnosis:** This is the phase that virtual failures are simulated for the unit tested, and the troubleshooting analysis & solution methods are optimized while solving active faults or alarms.
- ✓ **Reporting and Analysis Process:** All digital data is complied and reported by specific software tools. The reported screens are totally result oriented and commented by Untes test professionals.

Testimony Performance Test Infrastructure

Test center offers a large-scale of mechanical, electrical and electronic test and measurement parameters. Cooling only, heat pump and heat recovery units' tests are performed within high precision tolerance in comply with EN 14511-2011 standards by internationally calibrated measurement instruments.



Function and Performance Measurement Parameters

Thermodynamic Measurements

- ✓ Control room temperature (°C)
- ✓ Evaporator water inlet and outlet temperatures (°C)
- ✓ Cooling capacity (kw)
- ✓ Evaporator volumetric flow rate (m^3/h)
- ✓ Partial loads EER values (kw/kw)
- ✓ Full Load EER values (kw/kw)
- ✓ Device / Circuit operating load ratio (N° Load, N° Compressor)

Electrical Measurements

- ✓ R-Phase current (A)
- ✓ S-Phase current (A)
- ✓ T-Phase current (A)
- ✓ Supply voltage (V)
- ✓ Power (kW)
- ✓ Power factor (Ø)