

# Thermal Management Digital Factory Acceptance Testing

A Flexible and Innovative Approach to The FAT Process



*Thermal Management Digital FAT is a customer-centric process that allows operators, contractors and certifying bodies to follow the detailed Factory Acceptance Testing from any location around the globe.*



## Benefits

### Customer First

Digital FAT is primarily designed to address customer needs with innovative solutions to carry out the business process without interruptions, and assure utmost quality. While we replace face-to-face interaction with digital sessions, the focus still remains on establishing a collaborative approach, finding the right solutions and helping the customer meet their project needs at all stages.

### Time-saving Planning

Digital FAT allows customers to find the most convenient slot without having to worry about flight availability, busy schedules, and travel restrictions. The slot is booked as part of the project execution milestone and the customer's team only needs to connect at the agreed time to follow the complete process live. This also allows to free up valuable customers' expert personnel time from travelling and logistical constraints.

### Flexible Approach

Digital FAT allows the customer to include any specific tests and measurements based on project needs. The complexity of the Digital FAT ranges from standard factory-defined test sequence to any customised measurement, identified and agreed upon during the project planning stage.

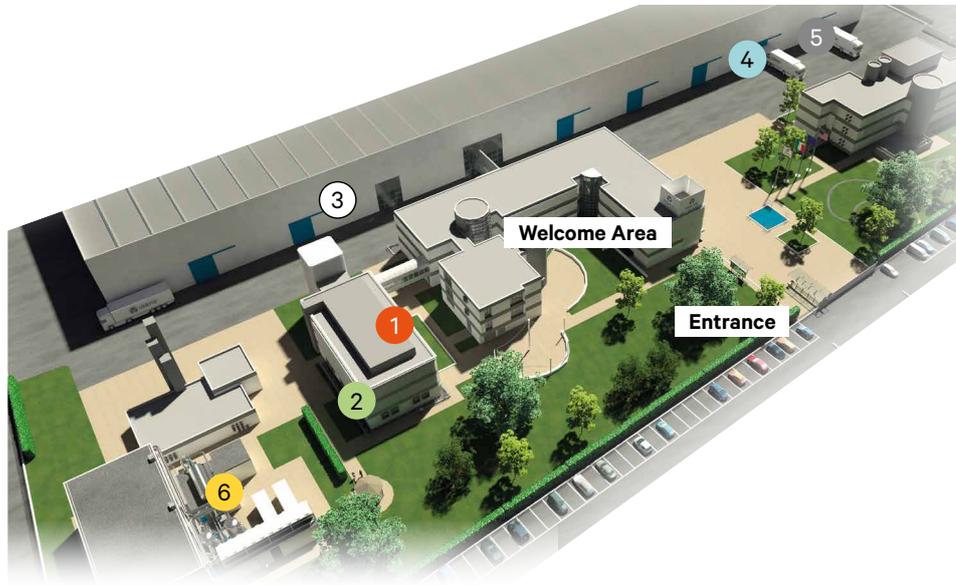
### Quality Assurance

The Vertiv Thermal Management team works to assure the same level of quality and peace of mind as if the meeting is happening in person. All sessions are carefully planned, recorded with cameras and available for review after the session to resolve any doubts. The resulting documents include all testing results and are validated and signed by Vertiv and customer teams.

### Environmental Responsibility

Digital FAT supports smart resource management by replacing expensive and carbon-intensive travelling with a digital process that provides the same level of collaboration, interaction and quality.

*Vertiv's Customer Experience Center, located in Tognana (Padova - Italy), is specifically designed for customers to interact with Thermal Management data center technologies.*



## 1 R&D Validation Lab 1

The Research & Development Validation Lab 1 is specifically designed to test floor-mount units and can balance a thermal load of up to 150 kW with a chamber air temperature between 0°C and 60°C.

## 2 R&D Validation Lab 2

Designed for conditioners belonging to the Telecom sector, the Research & Development Validation Lab 2 includes two different testing chambers: one simulating internal ambient conditions from 0°C to 60°C and the other simulating external ambient conditions from -32°C to 60°C. This validation area can balance a thermal load of up to 100 kW (50 kW in each room).

## 3 Floor-Mount Validation Lab

The Floor-Mount Validation Lab meets the increasing requests for witness tests and specific product-type approvals. Equipped with a highly automated testing chamber, this validation area can balance a thermal load of up to 200 kW and can simulate a test environment within a temperature range of 0°C to 60°C.

## 4 Evaporative Cooling Innovation Lab

Dedicated area to test the state-of-the-art Liebert EFC - Vertiv's highly efficient indirect evaporative freecooling unit. Testing parameters include IT loads of up to 450 kW and an airflow of up to 120,000 m<sup>3</sup> per hour at any external ambient temperature required to simulate typical peak conditions across the EMEA region.

## 5 Freecooling Chiller Validation Area

The Freecooling Chiller Validation Area is able to balance a thermal load of up to 1600 kW with a chamber air temperature between 20°C and 50°C and chiller water set point between 5°C and 20°C.

## 6 Adiabatic Freecooling Chiller Innovation Lab

This latest designed lab can test units with cooling capacities up to 1.5 MW with state-of-the-art accuracy in a broad range of working conditions, from -10°C to +55°C, also for adiabatic units.

## Solution Overview

### What is a Digital FAT?

We offer multiple approaches to conduct the FAT depending on the customer and project requirements. Digital FAT allows the customer to follow the full testing sequence in a remote setup via a high-definition camera that is managed by a FAT specialist who supervises the testing. There are three stages to carry out during the process: setup, testing and closure.

### Setup

This stage validates all the equipment settings and ensures compliance against applicable standards. The Vertiv product manager will immediately contact the customer to validate the participants for the session and confirm the test script for any customised or additional tests and records included within the scope.

### During FAT

At a pre-defined time, the customer connects to a confidential Teams meeting where they can interact with the FAT specialist and witness the system being tested in real time as the session is being recorded. At any time, the customer can ask a question, request a zoom in on the multimeter reading, or any other additional requests they might have. The testing follows a pre-defined script, previously agreed upon during the setup stage.

### Closure

Upon completion of all testing, the FAT specialist and customer go through a digital "punch-list" document shared on screen and agree on the final ranking. The customer then prints out and signs the document to subsequently be sent to Vertiv for a return signature. Finally, the FAT specialist shares all documented test results, images, recording, then awaits customer confirmation for the shipping release.