

# Thermal Test Report

## LHX+ 5kW

### Revision 1.0

DUT type:	LHX+ 5kW	Test date:	20200128
DUT p/n:	29714-017	Firmware:	-
DUT s/n:	Engineering sample	Test also applies to p/n:	-
Test item:	Determine the total/global airflow of the LHX+ 5kW		
Results:	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL <input type="checkbox"/> MIXED		
Document history:			
Revision	Date	Author	Description of changes
1.0	20210312	DD	Initial release



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## 1 Test purpose

In this report you will find the measurement results of the **total air volume** of the heat exchanger LHX+ 5kW.

The system was tested with the **air performance test rig** (description see page 4) at **normal operation**.

## 2 Description of the test

The heat exchanger was fixed to the **air performance test rig**. Operating conditions for the fans were **10VDC (max. fan speed), 9VDC, 8VDC, 7VDC, 6VDC, 5VDC, 4VDC and 3VDC** control voltage.

### 3 Test Setup

#### 3.1 Test resources/equipment

##### 3.1.1 Air performance test rig for fans according ISO 5801

- The test rig allows flow measurements up to 5.000 m<sup>3</sup>/h at a test pressure of 3.000 Pa
- The flow rate is determined using high precision orifice meters according to DIN EN ISO 5167-2

- Specially developed from ILK Dresden

- Measurements:

- Air flow volume of fans in cases, cabinets and systems
- Determination air drag characteristic curves of filter mats, perforations and openings
- Fan comparison, air flow volume, speed, power input, power, AC, DC clamping



Figure 1 Air performance test rig\_1

- Output characteristic curves of fans with characteristic drag curves or characteristic systems curves

- The control and data acquisition is realized by a PC-based data acquisition system



Figure 2 Air performance test rig\_2

### 3.2 Test object

The heat exchanger was equipped with following components:

- Heat exchanger: Leel Coils W2S1G041704001410061HLDAOR—PE / Schroff 69714-093
- 1 fan: Ziehl Abegg RH20V-4IP.Z8.AR
- No control unit
- Water connection → for measurements not needed

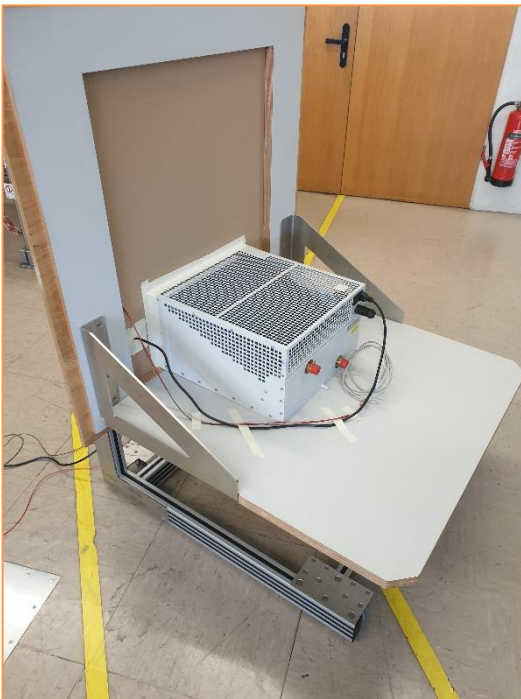


Figure 3 Measurement setup\_1



Figure 4 Measurement setup\_2

## 4 Measurement results

### 4.1 Heat exchanger at overall operation

Control voltage [VDC]	Fan Speed [1/min]	Total air flow	
		[m <sup>3</sup> /h]	[CFM]
10	4354	987	581,2
9	4290	975	574,2
8	3788	864	508,8
7	3267	741	436,4
6	2765	624	367,5
5	2228	496	292,1
4	1726	380	223,8
3	1208	253	149,1

Table 1 Heat exchanger at overall operation