

# Preventive maintenance IDEV

February, 10 2021, Annual visit



Customer		Customer Ref. :	
Customer Company	:		
Site contact name	:	Geir Vistung	Site contact Tel :
Site contact email	:		
Site company	:	Digiplex Norway AS - Holtskogen	
Site address	:	Holtskogen 31, 1825 Tomter	
Site country	:	Norway	Customer account :
Room name	:	Digiplex - Holtskogen POD C	

Field Service Engineer		Service Request # / Activity : WO-08409909	
FSE name	:	Mario dos Santos	Service District : Secure power - Norway
FSE address	:	Sandstuveien 68	

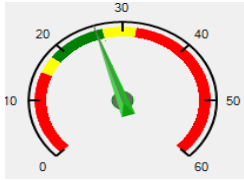
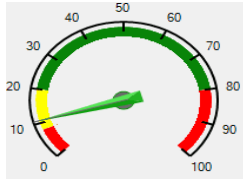
Visit results
Kompressor la ut på lavttrykks pressostet under oppstart pga lav utetemperatur, og startet kun ved tuning via Cooling Tuner. Mistenker noe lav totalfylling av kuldemedium. Kompressoren rakk ikke å stabilisere seg tilstrekkelig under drift grunnet lav last og utetemperatur. Maskinen fungerer ellers som normalt.

(FSE) Recommendations / required actions
Sjekk av totalfylling blir fulgt opp snarest, og avtales nærmere med kunden for utbedring. Return air sensoren viser ca 1.5 grad for lav temperatur i forhold til målt verdi. Etter avtale med kunden er timeteller for Air filter service alarm og Unit service alarm deaktivert. Dette da filter sjekkes ved hver service. J5 kontroller Firmware er oppdatert til 1.2.4.002_DFC. Se øvrige kommentarer i rapporten.


Signature	
Customer signature	Schneider Electric signature
Geir Vistung	Mario dos Santos



Equipment data		Customer Ref. :	
Equipment concerned	: IDEV	Install/Startup date	: September, 10 2020
Serial number	: SCE 153577	Capacity	: 52.5 kW
Configuration	: Group configuration		
Unit number within group system: 2 / 2			

Main Information	
Room & environmental conditions	Cooling
 <p><b>26 °C</b></p>	 <p><b>11.00%</b></p>
Ambient temperature	Room environment humidity
	Equipment age : 0 years, 5 months, 16 days

Visit data		Customer Ref. :	
Service Request # / Activity : / WO-08409909			
Work time start	: February, 10 2021 14:48	Work time end	: February, 10 2021 14:48
Entitlement#	:	Entitlement name	:
Account ID	:	ISX Solution	:

Lifecycle Indicator		Parts replacement schedule								
Part		2022	2023	2024	2025	2026	2027	2028	2029	2030
	Air filter	✓								
	Compressor									✓
	Fan									✓
	Cards									✓
	Contactor									✓

## Synthesis page

Checks carried out	Status when leaving	Comments
System Room Check	●	
<b>System check</b>		
Visual Check	●	Visual Check : Return air sensoren viser ca 1.5 grad for lav temperatur i forhold til målt verdi.
Electric environment checking	●	
Electrical measurement	●	
<b>Unit inspection</b>		
Unit Functional check	●	Unit Functional check : Fuktindikator i seglasset indikerer at anlegget er tørt. Flashgass i seglasset under drift av kompressor kan indikere mangel på kuldemedium. Pga lav last i rommet og lav utetemperatur rekker kompressoren ikke stabilisere seg tilstrekkelig. J5 kontroller Firmware er oppdatert til 1.2.4.002_DFC.
Heating check	●	
Serial Numbers	●	
Settings	●	
<b>Service and Parts</b>		
Parts with Life Duration	●	
<b>IT Room Assessment</b>		
Air flow check	●	
Final Check	●	
<b>Notes</b>		
Comments	●	

### Did you know ?



Circulation of cool air in a computer room is rarely optimized; typically only 30 to 50% of this air is actually employed to cool the IT equipments.

The ever increasing requirement for more density in today's IT equipment only heightens the need for data center air management specialists, who are properly trained to diagnose the computer room air flow and temperature requirements and recognize issues that can be corrected by implementing simple best practices.

Improved management of airflow in your IT room can result in:

**Lower Costs** - Reduced energy consumption and cold air demands.

**Increased Availability** - Improved server cooling results in higher reliability.

**Increased Capacity** - Better cooling efficiency increases equipment performance and eliminates the need to add more cooling units.

#### Schneider Electric's commitment:

Schneider Electric is committed to helping customers reduce energy costs and carbon emissions by 30%.

Deploying new technologies such as blade servers and virtualization create new challenges in terms of power, cooling and energy management. In addition, the capacity requirements of many Data Centers has been multiplied by 30 in 2 years, all experts agree that this rise will continue to accelerate.

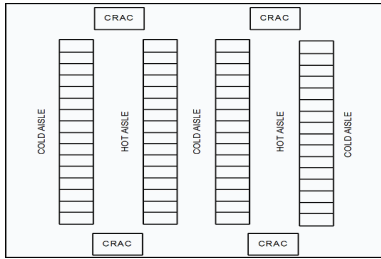
Optimizing the power consumption of computer rooms and data centers is critical and may require leveraging new technologies to achieve economies in power consumption. These economies are substantial.

To turn our words into action, our Schneider Electric's Field Service Engineers have received specific training to enable them to diagnose the effectiveness of the airflow in your IT rooms.

#### On the next page you will find the results of this evaluation.

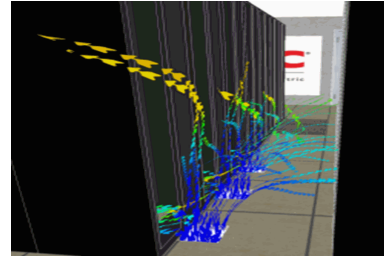
For more information on optimizing energy usage and availability in your data center, call one of our Energy Specialists on <http://www.schneider-electric.com>. To learn more please view our short [video](#) "Energy Management Services for Your Data Center". You can also download free white papers on this subject at [www.apc.com/en](http://www.apc.com/en) (under "Support" - "learn" - "White Papers")

### Cooling unit alignments



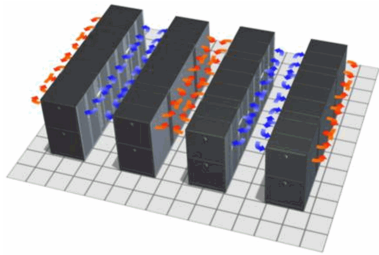
To optimize a raised-floor cooling system, cooling units must be aligned with hot aisles.

### Raised floor leakage



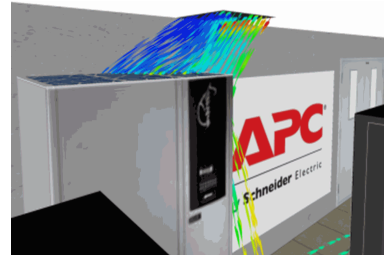
Cable cutouts in a raised floor environment should be sealed to avoid bypass airflow.

### Hot/Cold aisle configuration



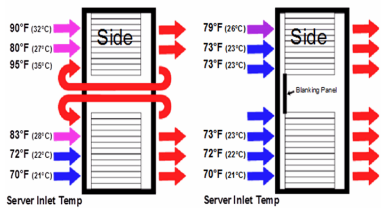
Configure rows in alternating 'hot' and 'cold' aisles to avoid mixing between 'hot' and 'cold' air.

### Diffuser location



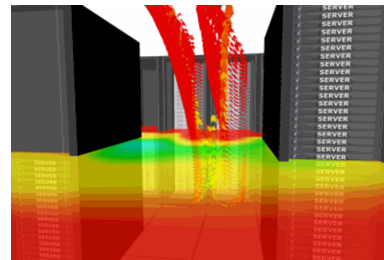
Roof or wall mounted distribution vents need to be properly positioned to better facilitate hot air removal.

### Gaps in the racks



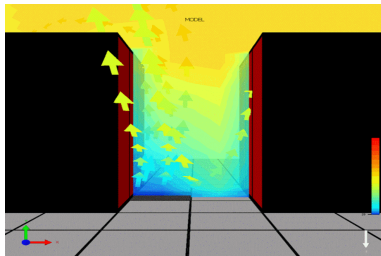
Prevent hot exhaust from re-entering the equipment's intake by installing blanking panels in all of the empty front panel U-spaces in the rack.

### Gaps in the rows



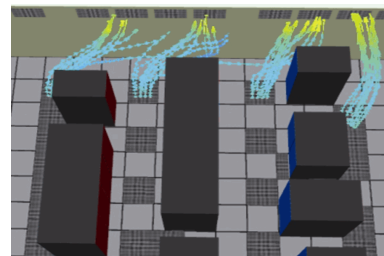
Prevent hot exhaust from recirculating back to the equipment's intake side by removing any openings (gaps) in the rows.

### Perforated tiles in hot aisle



To optimize a raised-floor cooling system, cooling air tiles must be located in the cold aisle and hot air return vents should be located above the hot aisle.

### Perforated tiles placement



In order to optimize cooling units performance and decrease dehumidification needs, the location of distribution vents sources should ensure to not end up returning air to the CRAC unit at lower temperatures.

## Maintenance summary

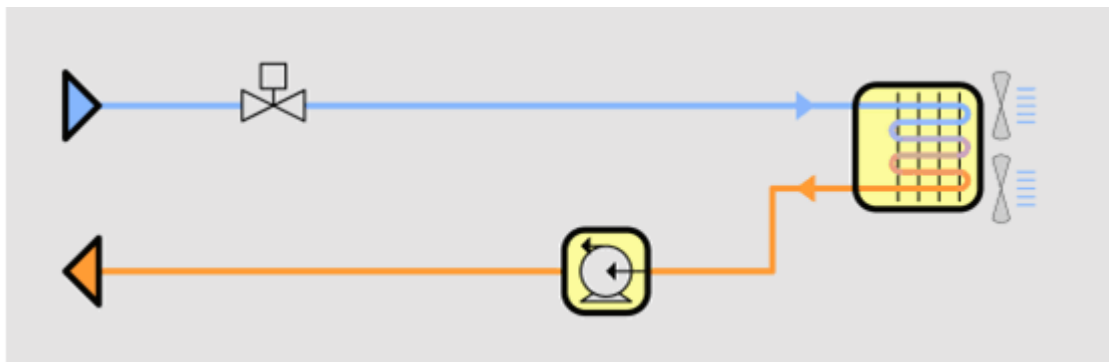
Sjekk av totalfylling blir fulgt opp snarest, og avtales nærmere med kunden for utbedring.

Return air sensoren viser ca 1.5 grad for lav temperatur i forhold til målt verdi.

Etter avtale med kunden er timeteller for Air filter service alarm og Unit service alarm deaktivert. Dette da filter sjekkes ved hver service.

J5 kontroller Firmware er oppdatert til 1.2.4.002\_DFC. Se øvrige kommentarer i rapporten.

## Installation configuration



## Comments

Customer

No comment

## Customer issues

Customer

No comment

Schneider Electric

No comment

## List of measurement devices

Device type	Device model	Serial number	Last calibration date
Multimeter	179	25940502	12 December 2017
Refrigerant Leak Detector	D-TEK	To be filled	09 October 2017
Oscilloscope	Fluke 43B	28440409	10 September 2015
Thermometer	ETI	D19401199	05 November 2020

## 1 System Room Check

### Room environment

The environment where the equipment is located is suitable for service operation.	Yes	
Specify the type of room where the unit is located.	Electrical Room	
Specify the type of cooling used in the room.		Satisfactory
Measure and record the room temperature:	26 °C	Satisfactory
Room Environment Humidity	11 %	Satisfactory
There is sufficient access to operate on the unit	Yes	

### Customer Room Designation

Record the customer room designation:	Digiplex - Holtskogen POD C	Done
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## 2 System check

### 2.1 Visual Check

Model number of the unit	IDAV1511A
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### Inspection

Visual check for foreign conducting materials inside and on top equipment	Satisfactory
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#### Section comments

Return air sensoren viser ca 1.5 grad for lav temperatur i forhold til målt verdi.

### 2.2 Electric environment checking

#### Cable wiring

Power input/output wiring and ground cables checked for tightness	Yes
Field installed communication wiring check for tightness	Yes

### 2.3 Electrical measurement

#### Main input power supply measurements - Single phase

L1-N	236 V
L1-Ground	236 V

#### Main input power supply measurements - Three phases

L1-L2	409 V
L2-L3	410 V
L3-L1	410 V
L1-Ground	236 V
L2-Ground	237 V
L3-Ground	237 V



## Transformer Voltage Check

Transformer 1 Primary	236 V
Transformer 1 Secondary 1	25.8 V
Transformer 1 Secondary 2	25.8 V
Transformer 2 Primary	0 V
Transformer 2 Secondary 1	0 V
Transformer 2 Secondary 2	0 V
Transformer 3 Primary	0 V
Transformer 3 Secondary 1	0 V

## 3 Unit inspection

### 3.1 Unit Functional check

The unit firmware has been upgraded.	See comments
Installed firmware version	Display: aos_656.bin/bootmon_108.bin/Ledx2g_e11_600.bin / Unit: 1.2.4.002_DFC.bin
Field Service Bulletins have been performed	No

### Fan Motors Current Measurements - Three phases

Total current of fan motors 1, 2 and 3 : L1	7.5 A
Total current of fan motors 1, 2 and 3 : L2	7.5 A
Total current of fan motors 1, 2 and 3 : L3	7.5 A

### Controller

The controller and user interface addresses are configured properly	Yes
The user interface display is working properly	Yes
The controller is properly configured for the unit type and options installed	Yes

### Air flow

All blowers move freely with no noise	Yes
The fans achieve the desired speed setting and have the correct rotation	Yes
Fan speed (% of maximum)	75 %
External air dampers are open and working properly	Yes
The air flow differential pressure switch has been calibrated and tested	Yes

### Air filter

The air filters were replaced	No
The air filter run hours were reset to zero	No
The air filter differential pressure switch has been tested	Yes

### Cooling

All air bleed valve caps are installed and secure	Yes
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### Sensor

All of the sensors are reading properly	See comments
Return air temperature	23.9 °C
Return air % relative humidity	16 %
Delivery air temperature	25.5 °C
Chilled water inlet temperature	0 °C
Hot water inlet temperature	0 °C
Chilled water outlet temperature	0 °C
Hot water outlet temperature	0 °C

### Circuit 1 check

Sight glass indicates the system is dry	Yes
Circuit responds to the cooling demand	Yes

### Circuit 1 measurements

Suction pressure	8.2 bar
Superheat temperature	6.2 °C
Suction line temperature	10.7 °C
Discharge pressure	18.6 bar
Subcooling temperature	6.3 °C
Liquid line filter temperature gradient	0 °C
Condenser inlet liquid temperature	0 °C
Condenser outlet liquid temperature	0 °C
Compressor current 1, L1	19.4 A
Compressor current 1, L2	18.3 A
Compressor current 1, L3	19.1 A
Compressor current 2, L1	0 A
Compressor current 2, L2	0 A
Compressor current 2, L3	0 A

### Circuit 2 check

Sight glass indicates the system is dry	Yes
Circuit responds to the cooling demand	Yes

### Circuit 2 measurements

Suction pressure	0 bar
Suction line temperature	0 °C
Superheat temperature	0 °C
Discharge pressure	0 bar
Subcooling temperature	0 °C
Liquid line filter temperature gradient	0 °C
Condenser inlet liquid temperature	0 °C
Condenser outlet liquid temperature	0 °C
Compressor current 1, L1	0 A
Compressor current 1, L2	0 A
Compressor current 1, L3	0 A
Compressor current 2, L1	0 A
Compressor current 2, L2	0 A
Compressor current 2, L3	0 A

#### Section comments

Fuktindikator i seglasset indikerer at anlegget er tørt.

Flashgass i seglasset under drift av kompressor kan indikere mangel på kuldemedium.

Pga lav last i rommet og lav utetemperatur rekker kompressoren ikke stabilisere seg tilstrekkelig.

J5 kontroller Firmware er oppdatert til 1.2.4.002\_DFC.

### 3.2 Heating check

The electric heaters respond to the demand	Yes
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### Electric Heat Current Measurements Level 1

Total electric heat current, L1	4.5 A
Total electric heat current, L2	4.5 A
Total electric heat current, L3	4.5 A

### Electric Heat Current Measurements Level 2

Total electric heat current, L1	8.9 A
Total electric heat current, L2	9 A
Total electric heat current, L3	9.3 A

### Electric Heat Current Measurements Level 3

Total electric heat current, L1	13.2 A
Total electric heat current, L2	13.5 A
Total electric heat current, L3	13.5 A

### 3.3 Serial Numbers

#### Out Door Heat Exchanger - Three phases

Model number	OCC1701LTB
Serial number	EB202000059

### Measurements

L-N	4.7 A	236 V
L1-L2	0 A	0 V
L1-L3	0 A	0 V
L2-L3	0 A	0 V
L-Ground	0 A	0 V

### 3.4 Settings

#### Group configuration

Cycle time	0 h	No
Number of stand-by units	0	

### Setpoints

Cooling set point	26 °C
Cooling proportional band	0 °C
Dehumidification set point	55 %
Dehumidification proportional band	15 %
Humidification set point	0 %
Humidification proportional band	0 %
Delivery air temperature set point	0 °C

### Alarm Thresholds

High room temperature	40 °C
Low room temperature	17.8 °C
High room humidity	80 %
Low room humidity	0 %
High delivery air temperature	28.8 °C

## 4 Service and Parts

### 4.1 Parts with Life Duration

#### 4.1.1 Compressor

Reference	
Quantity	0
Justification	Other
Installation date	10 September 2020
Next replacement date	2030

#### 4.1.2 Air filter

Reference	
Quantity	2
Justification	Other
Installation date	10 September 2020
Next replacement date	2022

#### 4.1.3 Fan

Reference	
Quantity	0
Justification	Other
Installation date	10 September 2020
Next replacement date	2030

#### 4.1.4 Cards

Reference	
Quantity	0
Justification	Other
Installation date	10 September 2020
Next replacement date	2030

#### 4.1.5 Contactor

Reference	
Quantity	0
Justification	Other
Installation date	10 September 2020
Next replacement date	2030

## 5 Final Check

### Final Inspection

The area around the Unit is clean and orderly	Yes
The unit is completely operational	No
Active alarms are present	No
The interior/exterior of the unit is clean and free of debris	Yes
Interior and exterior panels are securely fastened	Yes

## 6 Notes

### 6.1 Comments

#### General comments

No comment

#### Visual Check

Return air sensoren viser ca 1.5 grad for lav temperatur i forhold til målt verdi.

#### Unit Functional check

Fuktindikator i seglasset indikerer at anlegget er tørt.

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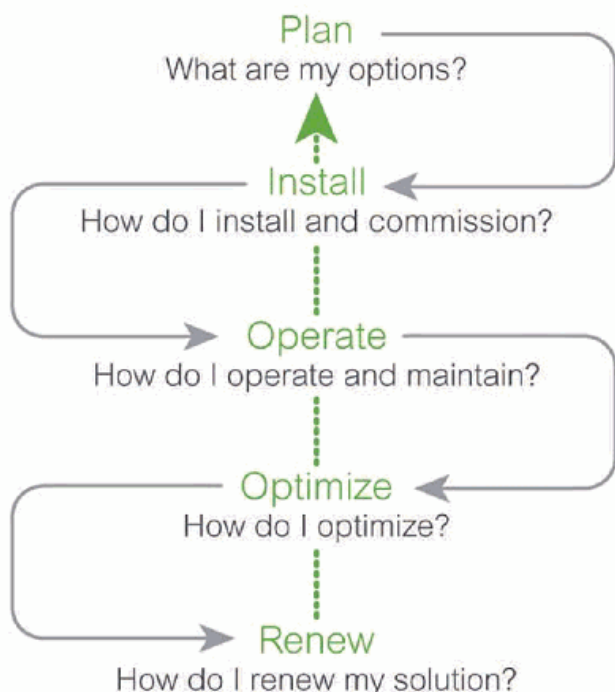
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J5 kontroller Firmware er oppdatert til 1.2.4.002\_DFC.

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Rely on Schneider Electric Critical Power & Cooling Services to protect your UPS from unexpected issues and downtime. Trained and trusted professionals are at your disposal to support and provide high quality service for your equipments.

## Life Cycle Services



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- **Experience:** Our proud 170-year history has led us to worldwide recognition as the thought leader in energy management, power and cooling infrastructure, and energy efficiency.
- **Reputation:** Our highly trained teams — technical support, project managers, Field Service Engineers (FSEs) — and our strong commitment to quality service have earned us a reputation as a trusted advisor in the industries we serve.
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- **Speed:** If equipment issues should arise, our technical support team is only a phone call away, ready to help you quickly diagnose the problem. When on-site help is required, our service plans dispatch a FSE rapidly, ensuring your system is up and running as fast as possible.

### Plan

**Assessment:** Site survey, engineering analysis, environmental inspection.

**Design Planning:** Free online tools to plan and design tailor-made solutions.

### Install

**Project Management:** Assistance in completing rollouts on time and within budget.

**Installation:** Equipment implementation and optimization, physical assembly and logistics coordination.

**Start-up:** Initial setup, installation, verification.

**Training:** Onsite equipment orientation, operational and maintenance education.

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**Monitoring Service:** 24\*7 digital monitoring service with instant access to data and experts through Smartphone apps well as operational insights and analytics.

**Preventive Maintenance:** Corrective maintenance, system cleaning, environmental inspection, functional verification, and free firmware upgrades.

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**Data Center Health Check:** Site-level assessment as well as inventory list for Schneider Electric and 3rd party vendor equipment.

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**Modernization Services:** solutions to protect your aging UPS from unexpected issues and downtime. Assets' availability will increase and investments maximized.

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<http://www.schneider-electric.com/b2b/en/services/field-services/critical-power-and-cooling/>