



FACILITIES MANAGEMENT CENTRAL TECHNICAL SERVICES

SPECIFICATION FOR SERVICE AND MAINTENANCE OF HVAC SYSTEMS FOR DATA CENTRES FOR THE UNIVERSITY OF JOHANNESBURG

SPECIFICATIONS

The University of Johannesburg (UJ) invites service providers to tender for Service and Maintenance of HVAC systems supporting data centres at all four (4) campuses namely: Auckland Park Kingsway Campus (APK), Auckland Park Bunting Road Campus (APB), Doornfontein Campus (DFC) and Soweto Campus (SWC) and the JBS Park Building, for a (1) one-year period with the option to extend for an additional (2) two years based on performance, for a total of (3) three years, as per the specification contained in this document.

1. PURPOSE

UJ requires to appoint suitably qualified persons or organizations (of CIDB 3ME or more) for the following work at the University of Johannesburg: for service and Maintenance of HVAC systems supporting data centres at all four (4). The service provider shall perform routine maintenance (service) and testing, at specified frequency of the following equipment:

- HVAC systems for data centre
- HVAC systems/Split units for UPS's supporting the data centre

Service provider will also be required to be on standby for emergencies and call outs

2. SCOPE DESCRIPTION

The scope comprises of HVAC systems for data centre and Split units for UPS's supporting data centre as follows:

HVAC systems for data centres

The data centre HVAC systems service will be done on a monthly, quarterly and annual basis as follows:

Monthly services:

Airedale Units

- Log Evaporator temperature In and Out
- Check slave master control status.
- Log amperages on evaporator fans
- Check operation of control thermostat
- Check operation of compressor
- Check operation of fan.
- Check condensate drains & observe.
- Check for noise and vibration
- Wash filters
- Check operation of humidifier
- Log suction pressure
- Log discharge pressure
- Log compressor amperage

Extract air fans

- Clean filter
- Check operation of fan motor
- Clean fresh air intake grill

APC DX A/C Units

- Cool Output
- Cool Demand
- Supply Air
- Return Air
- Max Rack In
- Rack 1
- Rack 2
- Rack 3
- Air Flow
- Fan Speed
- Filter DP

- Supply Humidification
- Return Humidification
- Humidification Dmd
- Reheat Output
- Suction Pressure
- Discharge Pressure
- Humidifier Current
- Humidifier Conduct
- Comp Drive: Speed
- Comp Drive: Power
- Comp Drive: Voltage
- Comp Drive: Current
- Comp Drive: DC Link
- Comp Drive: Heat Sink
- Comp Drive: Control Card
- Comp Drive: Warn Stat
- Comp Drive: Alarm Stat

Group Status

- Cool Output
- Cool Demand
- Cool Setpoint
- Max Rack
- Min Rack
- Air Flow
- Humidification Dmd
- Humidification Act
- De-Humidification Dmd
- De-Humidification Act
- Reheat Dmd
- Reheat Act

Run Hours

- Air Filters
- Fan
- Heaters
- Condensate Pump
- Humidifier (if fitted)
- Compressor

APC INROW COOLERS-CHILLED WATER A/C UNITS

- Cool Output
- Cool Demand
- Supply Air
- Return Air

- Max Rack In
- Rack 1
- Rack 2
- Rack 3
- Air Flow
- Fan Speed
- Filter DP
- Supply Humidification
- Return Humidification
- Humidification Dmd
- Reheat Output
- Suction Pressure
- Discharge Pressure
- Humidifier Current
- Humidifier Conduct
- Comp Drive: Speed
- Comp Drive: Power
- Comp Drive: Voltage
- Comp Drive: Current
- Comp Drive: DC Link
- Comp Drive: Heat Sink
- Comp Drive: Control Card
- Comp Drive: Warn Stat
- Comp Drive: Alarm Stat

Group Status

- Cool Output
- Cool Demand
- Cool Setpoint
- Max Rack
- Min Rack
- Air Flow
- Humidification Dmd
- Humidification Act
- De-Humidification Dmd
- De-Humidification Act
- Reheat Dmd
- Reheat Act

Run Hours

- Air Filters
- Fan
- Heaters
- Condensate Pump
- Humidifier (if fitted)

- Compressor

Carrier Air Cooled Chillers

- Check liquid line sight glass for bubbles
- Check moisture indication at sight glass
- Log Suction Pressure
- Log Discharge Pressure
- Log Condenser Air temperature In and Out
- Log Evaporator water temperature In and Out
- Check operation of Chilled Water Flow Transducer
- Log compressor amperages
- Log evaporator primary water pump amperages

Water Pumps:

- Check oil sump
- Check mechanical seal for leaks
- Log amperages on water pumps
- Log suction and discharge water pressure

Quarterly Services:

Airedale units:

- Check air pressure switch
- Check alignment of V-Belts & Pulleys
- Clean humidifier bottle where possible

Carrier Air Cooled Chillers

- Check Refrigerant Circuit for leaks
- Check operation of High-Pressure Transducers
- Check operation of Low-Pressure Transducers

Water Pumps

- Clean coupling

Annual services:

Airedale units:

- Chemical clean condenser coil

Carrier Air Cooled Chillers

- Chemically Clean Condenser Coils
- Clean strainers

Split units for UPSes supporting data centres

(Cassette, Midwall, Console & Hideaway)

Monthly Services

- Check and clean filters
- Check operation of cooling
- Check operation of fans
- Check condensate drains and observe
- Log on / off coil air temperature

Quarterly Services

- Log suction pressure

(Where schrader valve is available)

- Log discharge pressure

(Where schrader valve is available)

Annual Services

Clean condenser coils

Exclusions:

- Broken parts will be quoted for and replaced on the client's account.
- Call out and emergencies will be quoted for and paid by the client.

NOTE: Refer to schedule "A" and "B" for equipment to be serviced and the proposed checklist

3. LEGAL COMPLIANCE

All work to comply with the Occupational Health and Safety Act (Act 85 of 1993), SANS 10400-O, SANS 10400-XA, SANS 204, SANS 10142 and all other applicable standards and regulations.

4. COMPILING OF SAFETY FILE

It is a requirement that the appointed service provider be able to supply the university with a Safety File with the items listed below; where applicable to the scope of work being tendered upon

- Section 37 (2) (Mandatory agreement)
- Project description/Scope of work

- Risk Assessments
- Safe Work Procedures
- COVID Compliance where applicable
- Personal Protective Equipment
- Checklists of all equipment
- Details of employees on site
- Appointment letters
- Letter of good standing/Insurance
- Incident Management Plan
- Emergency Plan &Emergency numbers
- Waste Management
- Material Safety Data Sheets (if applicable)
- Fall Protection Plan
- Health and Safety Policy
- Tool box talks
- Safety meetings
- Monthly Health & Safety Rep inspection sheets
- Site Safety Rules
- Training
- Isolation procedures for electrical contractors
- Permits (such as Hot work /Confined space entry)

5. COMMENCEMENT OF WORK

The supplier is to commence work within seven (7) days from the issue of an official purchase order from UJ.

6. REPORTING

Upon successful appointment, the service provider will provide a detailed service plan, organize access to perform the services and report all breakdowns to the UJ maintenance coordinator or applicable designated UJ staff member. Post-service meetings will be held with Archibus staff, UJ maintenance manager and maintenance coordinator where the services, any risks, and the mitigation and resolution of risks will be discussed in detail.

7. RECOMMENDATION

It is recommended that the RFP to appoint suitably qualified persons or organizations for Service and Maintenance of HVAC systems supporting data centres at all four (4) campuses namely: Auckland Park Kingsway Campus (APK), Auckland Park Bunting Road Campus (APB), Doornfontein Campus (DFC) and Soweto Campus (SWC), for a (1) one-year period with the option to extend for an additional (2) two years based on performance for a total of (3) three years – be approved for Procurement purposes.

SCHEDULE 'A'

SCHEDULE OF EQUIPMENT TO BE SERVICED AND MAINTAINED

A. Kingsway

Old Disaster Recovery Room (Library basement, APK)

- | | | |
|---|---|---|
| 2 | x | Daikin Midwall Split FAY100FAVE A/C unit (DR – UPS) |
| | | Unit No 1 Model :FAY100FAVE |
| | | Unit No 2 Model :FAY100FAVE |

A-Ring level 3 (A-Ring level 3)

- | | | |
|---|---|--|
| 6 | x | APC Inrow coolers (A-Ring – Server room) |
| | | Unit No 1 Model ACRP502 Serial UK0930111372A |
| | | Unit No 2 Model ACRP502 Serial UK0930111362B |
| | | Unit No 3 Model ACRP502 Serial UK1062610052A |
| | | Unit No 4 Model ACRP502 Serial UK0930111368B |
| | | Unit No 5 Model ACRP502 Serial UK0930111369A |
| | | Unit No 6 Model ACRP502 Serial UK1026210130B |
| 2 | x | Carrier Chiller 30RSB-120 with pump (A-Ring – Server room) |
| | | Chiller No 1 Model 30RSB-120-0026BEE Serial 12X912411 |
| | | Chiller No 2 Model 30RSB-120-0070PEE Serial 12D004363 |
| 2 | x | Daiken Units (PABX Room) |
| 2 | x | Daiken Model FHQ125BVV1B Serial EO28510 |

Library (Library, APK)

- | | | |
|---|---|---|
| 1 | x | LG Underceiling A/C unit (UPS Battery Room) |
| | | Model No LVNC068LLBO |

- | | | |
|---|---|---|
| 1 | x | McQuay Underceiling A/C units (UPS Room – for A-Ring level 3 Server room) |
| 1 | x | Jetair Underceiling A/C |

B. Doornfontein

- | | | |
|---|---|---|
| 1 | x | Airdale Model :DF13XAT (Server room) Serial : R10888-003
Model DF13XAT Serial : R10888-003 |
| 2 | x | Carrier Hideaway A/C units (Server room) |
| 1 | x | Spilt A/C (PABX Room) |

C. Bunting Road

- | | | |
|---|---|--|
| 3 | x | Jet-Air Under ceiling Units (Server Room) (Main Library) |
| 2 | x | Jet Air Under ceiling Units (UPS Room) (main Library) |
| 2 | x | Airwell midwall split Units (FADA UPS Room)
Model: AWAU YGF018H11 |
| 1 | x | Dunham Bush Midwall split (STH UPS Room)
Model: HP12MNI |
| 2 | x | Dunham Bush Midwall Split (Concowan UPS Room)
Model: HP24MNI |
| 1 | X | Jet Air under ceiling (Great Hall UPS Room)
Model:JASA H36A4/R |
| 1 | x | Jet Air Midwall split (UJ FM Server Room)
Model: JASA-H18A4/ SUE |

D. Soweto Campus

- | | | |
|---|---|---|
| 2 | x | APC Inrow coolers (Server room) |
| | | Unit No 1 Model ACRP102 Serial Uk0918110268 |
| | | Unit No 2 Model ACRP102 Serial Uk0918110234 |

2	x	McQuay Underceiling A/C units (UPS room) Unit No 1 MCM050ARAEDH-R Serial : 20524106-00031 Unit No 2 MCM050ARAEDH-R Serial : 20524106-00040
1	x	Midwall split A/C unit (UPS Battery room) Unit No 1 Model No ARY35FMVIB Serial No K1007693
1	x	Extract fan and filters (UPS Battery room)
1	x	Midwall split A/C unit (Old Server room) Unit no 1 Model No ASG-24CH

SCHEDULE "B"

SCHEDULE OF EQUIPMENT TO BE SERVICED AND MAINTAINED AS INDICATED BELOW

AIREDALE UNIT CHECK LIST:

Log Evaporator temperature In and Out	M -----
Check slave master control status.	M -----
Check air pressure switch	Q -----
Log amperages on evaporator fans	M -----
Check operation of control thermostat	M -----
Check operation of compressor	M -----
Check operation of fan.	M -----
Check condensate drains & observe.	M -----
Check for noise and vibration	M -----
Wash filters	M -----

Check alignment of V-Belts & Pulleys	Q -----
Check operation of humidifier	M -----
Clean humidifier bottle where possible	Q -----
Log suction pressure	M -----
Log discharge pressure	M -----
Log compressor amperage	M -----
Chemical clean condenser coil	Y -----

EXTRACT AIR FAN

Clean filter	M _ _ _ _ _
Check operation of fan motor	M _ _ _ _ _
Clean fresh air intake grill	M _ _ _ _ _

SPLIT AIR CONDITIONING UNITS (Cassette, Midwall , Console & Hideaway)

Check and clean filters	M _ _ _ _ _
Check operation of cooling	M _ _ _ _ _
Check operation of fans	M _ _ _ _ _
Check condensate drains and observe	M _ _ _ _ _
Log on / off coil air temperature	M _ _ _ _ _
Log suction pressure	

(Where schraeder valve is free available)

Q _ _ _ _ _

Log discharge pressure

(Where schraeder valve is free available)

Q _ _ _ _ _

Clean condenser coils

Y _ _ _ _ _

GENERAL

Report on any complaints from tenants

Y _ _ _ _ _

Instruct manager and inform him of any

Changes or adjustments

Y _ _ _ _ _

APC DX A/C UNITS

Cooling Unit Status

Operation Mode

Cool Output

M _____

Cool Demand

M _____

Supply Air

M _____

Return Air

M _____

Max Rack In

M _____

Rack 1

M _____

Rack 2

M _____

Rack 3

M _____

Air Flow

M _____

Fan Speed

M _____

Filter DP

M _____

Supply Humidification

M _____

Return Humidification

M _____

Humidification Dmd

M _____

Reheat Output

M _____

Suction Pressure

M _____

Discharge Pressure

M _____

Humidifier Current	M	_____
Humidifier Conduct	M	_____
Comp Drive: Speed	M	_____
Comp Drive: Power	M	_____
Comp Drive: Voltage	M	_____
Comp Drive: Current	M	_____
Comp Drive: DC Link	M	_____
Comp Drive: Heat Sink	M	_____
Comp Drive: Control Card	M	_____
Comp Drive: Warn Stat	M	_____
Comp Drive: Alarm Stat	M	_____

Group Status

Cool Output	M	_____
Cool Demand	M	_____
Cool Setpoint	M	_____
Max Rack	M	_____
Min Rack	M	_____
Air Flow	M	_____
Humidification Dmd	M	_____
Humidification Act	M	_____
De-Humidification Dmd	M	_____
De-Humidification Act	M	_____
Reheat Dmd	M	_____
Reheat Act	M	_____

Run Hours

Air Filters	M	_____
Fan	M	_____
Heaters	M	_____
Condensate Pump	M	_____
Humidifier (if fitted)	M	_____
Compressor	M	_____

APC INROW COOLERS-CHILLED WATER A/C UNITS

Cooling Unit Status

Operation Mode

Cool Output M _____

Cool Demand M _____

Supply Air M _____

Return Air M _____

Max Rack In M _____

Rack 1 M _____

Rack 2 M _____

Rack 3 M _____

Air Flow M _____

Fan Speed M _____

Filter DP M _____

Supply Humidification M _____

Return Humidification M _____

Humidification Dmd M _____

Reheat Output M _____

Suction Pressure M _____

Discharge Pressure M _____

Humidifier Current M _____

Humidifier Conduct M _____

Chilled Water Valve M _____

Group Status

Cool Output M _____

Cool Demand M _____

Cool Setpoint M _____

Max Rack M _____

Min Rack M _____

Air Flow M _____

Humidification Dmd M _____

Humidification Act M _____

De-Humidification Dmd M _____

De-Humidification Act M _____

Reheat Dmd	M	_____
Reheat Act	M	_____

Run Hours

Air Filters	M	_____
Fan	M	_____
Heaters	M	_____
Condensate Pump	M	_____
Humidifier (if fitted)	M	_____
Compressor	M	_____

CARRIER AIR COOLED CHILLER:

Check liquid line sight glass for bubbles	M	-----
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Check moisture indication at sight glass	M	-----
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Log Suction Pressure	M	-----
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Log Discharge Pressure	M	-----
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Log Condensor Air temperature In and Out	M	-----
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Log Evaporator water temperature In and Out	M	-----
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Check Refrigerant Circuit for leaks	Q	-----
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Check operation of High Pressure Transducer	Q	-----
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Check operation of LP Transducer	Q	-----
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Check operation of Chilled Water Flow Transducer	M	-----
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Log compressor amperages	M	-----
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Log evaporator primary water pump amperages	M	-----
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Chemically Clean Condenser Coils Y -----

WATER PUMPS:

Clean strainer Y -----

Clean coupling Q -----

Check oil sump M -----

Check mechanical seal for leaks M -----

Log amperages on water pumps M -----

Log suction and discharge water pressure M -----

GENERAL

Instruct Manager and inform him of any changes or adjustments made.

M -----

M - MONTHLY included with Minor cost

Q - QUARTERLY included with Minor cost.

Y - ANNUALLY included with Major cost if applicable to this contract.

B/A - BI-ANNUALLY

B/M - BI MONTHLY

W/A - EXTRA CHARGE WHERE APPLICABLE