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jaanch, aur saal mein ek baar cooling coil chemical wash aur electrical connections ki tightening zaroor karein.

Kya aap kisi **specific fault code**, **wiring diagram**, ya **maintenance checklist** ke baare mein aur detail mein jaanna chahte hain?

Maintanance check list se

18 November 2026

AHU (Air Handling Unit) aur FCU (Fan Coil Unit) ki complete Preventive Maintenance (PM) Checklist niche di gayi hai. Is checklist ko time-period (Monthly, Quarterly, aur Yearly) ke hisab se baanta gaya hai taaki unit bina kisi breakdown ke lambe samay tak sahi kaam kare

breakdown ke lambe samay tak sahi kaam kare.

1. Monthly Maintenance Checklist (Har Mahine)

- **Air Filters Ki Safai/Badlav:** Pre-filters aur FCU return air filters ko nikaal kar paani ya vacuum

+ Ask anything

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chocked hain toh unhe badal dein.

- **Drain Pan Aur Drain Line Ki Jaanch:** Condensate drain tray aur drain pipe ko check karein ki unmein koi kachra ya kaai (algae) toh nahi jami hai. Drain line mein paani daal kar flow test karein aur anti-algae tablet rakhein.
- **V-Belt Ki Condition Aur Tension:** AHU ke V-belts mein cracks ya ghisawat check karein. Belt ke beech mein ungli se dabane par 10mm se 15mm ka deflection hona chahiye.
- **Abnormal Awaz Aur Vibration:** Unit chalu karke blower, motor, aur casing mein kisi bhi tarah ki ajeeb awaz (grinding ya rattling) aur vibration ki jaanch karein.
- **Thermostat Aur Temperature Reading:** Supply air, return air, aur chilled water inlet/outlet temperature gauge ya BMS par check karein.

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2. Quarterly Maintenance Checklist (Har 3 Mahine Mein)

- **Cooling Coil Ki Safai:** Coil ke fins par jami dhool ko brush, vacuum, ya low-pressure water jet se saaf karein. Agar fins mud gaye

Ask anything

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- **Cooling Coil Ki Safai:** Coil ke fins par jami dhool ko brush, vacuum, ya low-pressure water jet se saaf karein. Agar fins mud gaye hain toh fin comb se seedha karein.

- **Blower Wheel Aur Housing Ki Safai:** Blower blades par jami dhool ko saaf karein kyunki isse airflow kam hota hai aur vibration badhta hai.

- **Chilled Water Strainer (Y-Strainer):** Isolation valves band karke Y-strainer ki jaali nikaalein aur usmein phanse kachre ko saaf karein.

- **Actuator Aur Control Valves:** 2-way aur 3-way motorized valves ke open aur close hone ki movement check karein. Dekhein ki valve stem se paani leak toh nahi ho raha hai.

- **Dampers Ki Movement:** Fresh air, return air, aur fire dampers ke blades aur linkage ko check karein aur zaroorat padne par lubricate karein.

- **P-Trap (U-Trap) Checking:** AHU ke drain line

mein lage P-trap ko saaf karein aur usmein paani bhar kar water seal ensure karein.

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3. Half-Yearly / Yearly Maintenance

+ Ask anything

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- **Pulley Alignment:** Laser tool ya straight edge ki madad se motor pulley aur blower pulley ka alignment check karein.
- **Insulation Aur Canvas Joint:** Chilled water pipes ke insulation aur blower ke flexible canvas connector mein kisi bhi phatne ya leakage ki jaanch karein.
- **Safety Interlocks Testing:** Fire alarm interlock, Differential Pressure Switch (DPS), aur electric heater ke high-limit thermostat ko test karein ki woh emergency mein trip ho rahe hain ya nahi.

Quick Inspection Summary Table

Component	Kya Check Karein	Frequency
Air Filters	Dust, pressure drop, damage	Monthly

Drain Pan & Pipe	Water flow, blockage, algae	Monthly
V-Belts & Pulleys	Cracks, tension, alignment	Monthly

+ Ask anything

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Dost ahu aur fcu aane wale common troubleshooting problems &solution...

18 November 2026

AHU (Air Handling Unit) aur FCU (Fan Coil Unit) mein aane wali 50 sabse common troubleshooting problems aur unke solutions niche diye gaye hain. Is list mein practical site issues aur unke direct solutions ko aasan bhasha mein samjhaya gaya hai.

1. Cooling Aur Heating Se Judi Problems (1–15)

- **Q1: AHU/FCU chal raha hai par room**

thanda nahi ho raha, kya karein?

Sabse pehle chilled water supply aur return isolation valves check karein ki woh poori tarah khule hain ya nahi. Saath hi thermostat ka set-point aur motorized actuator valve ki opening check karein.

+ Ask anything

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Problems (1–15)

- **Q1: AHU/FCU chal raha hai par room thanda nahi ho raha, kya karein?**
  Sabse pehle chilled water supply aur return isolation valves check karein ki woh poori tarah khule hain ya nahi. Saath hi thermostat ka set-point aur motorized actuator valve ki opening check karein.

- **Q2: Cooling bahut dheere ho rahi hai (low cooling), mukhya kaaran kya hai?**
  Air filters ya cooling coil par dhool jamne se heat transfer ruk jata hai. Filters ko saaf karein aur chilled water flow check karein.

- **Q3: Chilled water coil mein air lock ho jaye toh kaise theek karein?**
  Coil ke sabse upari hisse mein lage air vent valve ko thoda khol kar andar phansi hawa (air) nikaalein jab tak lagatar paani na aane lage.

- **Q4: Chilled water inlet aur outlet**

temperature ka antar (Delta T) kam kyun hota hai?

Kam Delta T (1°C–2°C) ka matlab hai ki coil ganda hai ya paani bina heat absorb kiye tezi se nikal raha hai. Coil saaf karein aur balancing valve check karein.

+ Ask anything

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- **Q7: FCU se thandi hawa aa rahi hai par room ke kone tak nahi pahunch rahi, kya karein?**
  FCU ka return air filter aur blower wheel dust se chocked ho sakta hai, unhe saaf karein aur fan speed ko High par set karein.

- **Q8: DX type AHU ki cooling coil par barf (ice) kyun jamti hai?**
  Airflow kam hone (dirty filter ya loose belt) ya system mein refrigerant gas kam hone par coil par barf jam jati hai.

- **Q9: Winter mein AHU/FCU garam hawa (heating) nahi de raha, kya check karein?**
  Electric heater ki power supply aur high-limit safety thermostat check karein, ya hot water valve ka actuator signal dekhein.

- **Q10: Electric duct heater baar-baar trip kyun hota hai?**
  Kam airflow ke kaaran heater element overheat ho jata hai. Air filters saaf karein aur airflow switch check karein.

- **Q11: Chilled water actuator ko BMS se command mil rahi hai par valve nahi khul raha, kyun?**

  Actuator aur valve stem ke beech ki coupling loose ho sakti hai ya valve andar se jam ho

Ask anything

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Actuator aur valve stem ke beech ki coupling loose ho sakti hai ya valve andar se jam ho gaya hai.

- **Q12: Return air temperature achanak bahut zyada badh gaya hai, kya kaaran hai?**
  Fresh air damper zaroorat se zyada khul gaya hai jisse bahar ki garam hawa andar aa rahi hai, ya room mein heat load badh gaya hai.

- **Q13: PICV (Pressure Independent Control Valve) sahi flow nahi de raha, kya karein?**
  PICV ke cartridge mein kachra phans sakta hai; isolation valves band karke cartridge ko flush karein.

- **Q14: FCU ke diffusers par paani ki boondein (sweating) kyun jamti hain?**
  Room mein humidity zyada hone ya supply air temperature bahut kam (dew point se neeche) hone par diffusers par condensation hota hai.

- **Q15: Chilled water supply temperature sahi hai par AHU off-coil temperature zyada aa**

raha hai, kyun?

Cooling coil ke fins par kachra jama hai ya chilled water flow kam hai, jisse hawa poori tarah thandi nahi ho pa rahi.

Ask anything

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power supply ke kisi bhi 2 phases ko aapas mein badal dein.

- **Q18: AHU ke V-belts jaldi-jaldi kyun ghis rahe hain ya toot rahe hain?**
  Motor aur blower pulley ka alignment kharab hone ya belt bahut zyada tight/loose hone se belts jaldi kharab hote hain.

- **Q19: V-belt ki sahi tightness kaise check karein?**
  Belt ke beech mein ungli se dabane par lagbhag 10mm se 15mm (aadha inch) ka dabav (deflection) hona chahiye.

- **Q20: FCU ka blower fan bilkul nahi ghoom raha, kya check karein?**
  MCB, thermostat power supply, fan motor ka run capacitor, aur motor winding check karein.

- **Q21: FCU fan sirf High speed par chal raha hai, Low aur Medium kaam nahi kar rahe, kyun?**
  Thermostat ka speed relay kharab ho sakta

hai ya fan motor ki Low/Medium speed winding open ho gayi hai.

- **Q22: AHU duct mein static pressure bahut zyada badh gaya hai, kya kaaran hai?**
  Supply duct mein lage Fire Dampers, VCD dampers, ya VAV boxes band hone se hawa ka

+ Ask anything

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dampers, ya VAV boxes band hone se hawa ka rasta ruk gaya hai.

- **Q23: AHU duct mein static pressure bahut kam ho gaya hai, kya check karein?**
  Flexible canvas duct phata ho sakta hai, AHU ka access door khula reh gaya hai, ya blower belt slip kar rahi hai.

- **Q24: Bag filter ke paas laga Differential Pressure (DP) switch alarm de raha hai, kya karein?**
  Bag filter dhool se bhar chuka hai; purana filter nikaal kar naya filter lagayein.

- **Q25: FCU blower motor bahut garam ho rahi hai aur dheere chal rahi hai, kya fault hai?**
  Motor ka capacitor weak ho gaya hai ya motor ke bearings jam ho rahe hain.

- **Q26: Supply air grill se hawa ke saath paani ke chheente kyun aa rahe hain?**
  Airflow velocity bahut zyada hone par

condensate water coil se ud kar duct mein ja raha hai; blower speed thodi kam karein.

- **Q27: Fire damper trip ho gaya hai, use reset kaise karein?**
  Duct ke access door se check karein; agar fusible link toot gaya hai toh naya lagayein, ya

+ Ask anything

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nikal raha jabki pipe saaf hai, kyun?
Negative pressure wale AHU mein sahi height ka P-trap (U-trap) na hone par hawa andar khinchti hai aur paani bahar nahi nikal pata.

- **Q31: AHU drain line ka P-trap sookh jaye toh kya samasya hoti hai?**
  Sookhe P-trap se bahar ki gandi hawa AHU ke andar khinchti hai aur drainage ruk jata hai; isliye P-trap mein paani bhar kar rakhein.

- **Q32: Chilled water pipe ke insulation se paani kyun gir raha hai?**
  Pipe insulation kahin se phata ya khula reh gaya hai, jisse bahar ki nami thande pipe par jam kar tapak rahi hai.

- **Q33: FCU drain tray mein baar-baar kaai (slime/algae) jamne se kaise rokein?**
  Drain pan ko har mahine saaf karein aur usmein anti-algae drain pan tablets rakhein.

- **Q34: Condensate drain pump chal raha hai par paani discharge nahi ho raha, kya karein?**

karein?

Pump ka non-return valve (check valve) block ho sakta hai ya discharge pipe mein kachra phans gaya hai.

- **Q35: Condensate pump high-level alarm de kar FCU ko band kar raha hai, kyun?**

+ Ask anything

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- **Q36: AHU casing ke bahar paseena (sweating) kyun aa raha hai?**
  AHU panel ke andar ka insulation kharab ho gaya hai ya mechanical room mein humidity bahut zyada hai.

- **Q37: FCU drain tray se paani ek taraf se overflow ho raha hai, kya karein?**
  FCU ka level bigad gaya hai; hanger rods ke nuts adjust karke unit ko drain pipe ki taraf halka sa slope dein.

- **Q38: Flexible braided hose pipe leak kar raha hai, kya karein?**
  Isolation valves band karein aur purane hose pipe ko badal kar naya lagayein.

---

4. Awaz, Vibration Aur Electrical/BMS Problems (39–50)

- **Q39: AHU chalne par bahut zyada vibration ho raha hai, kya kaaran hain?**

Blower wheel par dhool jamne se unbalance hona, motor ke bolts loose hona, ya anti-vibration spring mounts kharab hona iske kaaran hain.

- **Q40: AHU se teekhi cheenkhne**

(screeching) jaisi awaz aa rahi hai, kya fault

+ Ask anything

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- **Q46: FCU thermostat ki display bilkul band (blank) hai, kya check karein?**
  24V AC control transformer ka output voltage, fuse, aur control wiring check karein.

- **Q47: BMS par temperature reading "-40°C" ya "999°C" dikha raha hai, iska kya matlab hai?**
  Temperature sensor (NTC/PT1000) ka wire toot gaya hai (open circuit) ya aapas mein short ho gaya hai.

- **Q48: Fire alarm bajne par AHU band ho gaya hai, reset kaise karein?**
  Pehle Fire Alarm Control Panel (FACP) ko reset karein, phir AHU panel par lage fire interlock relay ko reset karke AHU start karein.

- **Q49: AHU ka Differential Pressure Switch (DPS) fan chalne par bhi "No Airflow" dikha raha hai, kya karein?**
  DPS ki sensing tubes nikal gayi hongi, phat gayi hongi, ya unmein paani/kachra bhar gaya hoga.

- **Q50: Contactor se tezi se on-off hone (chattering) ki awaz aa rahi hai, kya fault hai?**

  Control voltage kam aa raha hai (jaise 24V ki jagah 16V) ya contactor ki coil par dhool jam gayi hai

+ Ask anything

4:20 • Vo) LTE+ LTE 69%

Kya aapko inmein se kisi **specific electrical fault (jaise VFD codes)** ya **chilled water balancing** ke baare mein aur gehrai se jaankari chahiye?

VFD aur chilled water balancing related 0-Level se samjhaye aur ...

18 November 2026

VFD (Variable Frequency Drive) aur Chilled Water Balancing HVAC system ke do sabse zaroori hisse hain, jo energy bachane aur sahi cooling dene ka kaam karte hain. Niche in dono concepts ko bilkul basic (0-level) se samjhaya gaya hai aur uske baad practical Questions & Answers ka set diya gaya hai.

Bhag 1: VFD (Variable Frequency Drive) Ko 0-Level Se Samjhein

VFD Kya Hai Aur Kaise Kaam Karta Hai?

+ Ask anything

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speed dheemi kar deta hai.

Bhag 2: Chilled Water Balancing Ko 0-Level Se Samjhein

Chilled Water Balancing Kya Hai?

- **Asaan Bhasha Mein:** Building ke har AHU aur FCU tak barabar aur zaroorat ke mutabik thanda paani (GPM - Gallons Per Minute) pahunchane ki prakriya ko **Water Balancing** kehte hain.

- **Iski Zaroorat Kyun Hai?** Paani hamesha aasan rasta (kam resistance) chunta hai. Agar balancing nahi hogi, toh chiller plant ke paas wale AHU mein bahut zyada paani jayega (over-cooling) aur sabse door ya upar wale floor ke AHU mein paani nahi pahunchega (no cooling).

- **Delta T (ΔT) Ka Concept:**

- Coil mein ghusne wale paani ka temperature (Supply, jaise **7°C**) aur bahar nikalne wale paani ke temperature (Return, jaise **12°C**) ke antar ko **Delta T** kehte hain.

- Ideal Delta T **5°C (ya 9°F–10°F)** hona

Ask anything

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A. VFD Related Questions & Answers (1–15)

- **Q1: VFD ka full form kya hai aur iska mukhya kaam kya hai?**
  VFD ka full form **Variable Frequency Drive** hai. Iska mukhya kaam AC motor ko di jaane wali frequency (Hz) aur voltage ko control karke motor ki speed aur bijli ki khapat ko control karna hai.

- **Q2: VFD mein Frequency (Hz) aur Motor Speed (RPM) ka kya rishta hai?**
  Frequency jitni zyada hogi, motor ki speed utni hi tez hogi. Jaise 50 Hz par ek 4-pole motor 1450 RPM par ghoomti hai, toh 25 Hz par woh lagbhag 725 RPM par ghoomegi.

- **Q3: AHU ke VFD ko speed kam ya zyada karne ka command kaun deta hai?**
  Aam taur par Duct Static Pressure Sensor ya BMS (DDC controller) VFD ko **0–10V DC** ya **4–20mA** ka analog signal bhejta hai.

- **Q4: VFD display par "Local / Hand" aur "Remote / Auto" mode ka kya matlab hai?**

Hand/Local mode mein aap VFD ke keypad buttons se motor ko chalu/band aur speed set kar sakte hain. **Auto/Remote** mode mein VFD bahar ke BMS ya thermostat ke signal se chalta hai.

+ Ask anything

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rakha jata hai.

- **Q7: VFD par "OC" (Overcurrent) fault aane ke kya kaaran hain?**
  Motor winding short hona, cable kharab hona, blower jam hona, ya acceleration time bahut kam hona iske mukhya kaaran hain.

- **Q8: VFD par "OV" (Overvoltage) fault kab aata hai?**
  Incoming power supply mein voltage achanak badhne par ya deceleration time bahut kam hone par motor generator ban kar VFD mein wapas current bhejti hai, jisse OV fault aata hai.

- **Q9: VFD par "OH" (Overheat) fault kyun aata hai?**
  VFD ke cooling fan kharab hone, VFD ke heatsink par dhool jamne, ya AHU room ka temperature bahut zyada hone par VFD garam hokar trip ho jata hai.

- **Q10: VFD mein Minimum Frequency (Min Hz) kitni set karni chahiye?**
  AHU fans ke liye minimum frequency aam taur

AHU fans ke liye minimum frequency aam taur par **25 Hz se 30 Hz** rakhi jati hai, kyunki isse kam speed par motor ka cooling fan sahi kaam nahi karta aur motor garam ho sakti hai.

- **Q11: VFD ke saath motor ki direction (ulta ghoomna) kaise badalte hain?**

Ask anything

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VFD pehle AC power ko DC (Direct Current) mein badalta hai aur capacitors mein store karta hai, jise DC Bus kehte hain; phir inverter section use wapas variable frequency AC mein badalta hai.

- **Q14: VFD lagane se bijli ki bachat kaise hoti hai?**
  Affinity Laws ke mutabik, agar aap fan ki speed 20% kam karte hain, toh bijli ki khapat lagbhag **50% tak kam** ho jati hai.

- **Q15: VFD panel ke paas jaane par kaun si savdhani rakhni chahiye?**
  Power band karne ke baad bhi VFD ke capacitors mein high DC voltage rehta hai, isliye kam se kam **5 se 10 minute** ruk kar discharge LED bujhne ke baad hi haath lagayein.

B. Chilled Water Balancing Related Questions & Answers (16–30)

- **Q16: Chilled water system mein "Delta T" (ΔT) kya hota hai?**
  AHU coil ke Chilled Water Return temperature aur Chilled Water Supply temperature ke beech ke antar ko Delta T kehte hain (e.g., $12°C - 7°C = 5°C$).

+ Ask anything

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- **Q17: "Low Delta T Syndrome" kya hai aur isse kya nuksan hota hai?**
  Jab paani coil se bina poori garmi liye wapas chiller mein chala jata hai (jaise Delta T sirf 1°C ya 2°C aana), use Low Delta T kehte hain. Isse chiller plant ki efficiency gir jati hai aur pumps ko zyada bijli kharch karni padti hai.

- **Q18: Chilled water line mein "Balancing Valve" (DRV - Double Regulating Valve) ka kya kaam hai?**
  Yeh valve paani ke flow (GPM) ko ek fixed limit par set karne aur lock karne ke kaam aata hai taaki har AHU ko uski design ke mutabik hi paani mile.

- **Q19: Manual Balancing Valve se paani ka flow (GPM) kaise naapte hain?**
  Valve ke upar lage do pressure ports (High aur Low) par **Digital Manometer** lagaya jata hai. Pressure drop (ΔP) aur valve ke Kv chart ki madad se exact flow nikala jata hai.

- **Q20: PICV (Pressure Independent Control**

- **Q20. PICV (Pressure Independent Control Valve) aur normal 2-way valve mein kya antar hai?**

  Normal 2-way valve mein line pressure badhne par flow badh jata hai. **PICV** ek hi valve mein Control Valve + Balancing Valve +

Ask anything

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hai ya balancing valve bahut zyada band hai.

- **Q24: 2-Way Valve aur 3-Way Valve mein kya farq hai?**
  2-Way Valve zaroorat na hone par paani ke flow ko rok deta hai (Variable Flow system). **3-Way Valve** paani ko coil mein bhejne ke bajaye bypass line se wapas return header mein bhej deta hai (Constant Flow system).

- **Q25: Chilled water line mein "Pressure Gauge" aur "Thermometer" kahan lagaye jate hain?**
  Yeh AHU aur pump ke **Inlet (Supply)** aur **Outlet (Return)** dono taraf lagaye jate hain taaki pressure drop aur temperature difference (ΔT) aasani se dekha ja sake.

- **Q26: Index Circuit (Sabse door wala circuit) kya hota hai?**
  Chiller aur pump se sabse door ya sabse zyada resistance wala AHU/FCU **Index Circuit** kehlata hai. Balancing karte waqt iske valve ko 100% khula rakha jata hai.

- **Q27: Y-Strainer kahan lagaya jata hai aur kyun?**
  Y-Strainer hamesha AHU/FCU ke **Supply (Inlet) line** mein control valve se pehle lagaya jata hai taaki pipe ka kachra aur jung control

+ Ask anything

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Ki pehchan kya hai:

Pump ka pressure needle hilta (fluctuate) rehta hai, pipe se paani behne ki awaz aati hai, aur AHU mein cooling band ho jati hai.

- **Q29: Variable Primary Flow (VPF) system mein VFD pump kaise kaam karta hai?**
  Jab building ke 2-way valves band hote hain toh pipe mein Differential Pressure (DP) badhta hai; DP sensor VFD ko signal deta hai aur pump ki speed kam ho jati hai.

- **Q30: Chilled water balancing complete hone ke baad kya karna chahiye?**
  Manual balancing valves ki memory stop (locking screw) ko lock kar dena chahiye taaki maintenance ke dauran valve band karke kholne par bhi purani setting na bigde.

Kya aap **VFD ke basic parameters set karne ka tarika** ya **PICV valve ki troubleshooting** ke baare mein step-by-step jaanna chahte hain?

Yes dost 0-Level se samjhaye

Ask anything