Title: BMS Operation & Alarm Handling

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1.0 OBJECTIVE:

To lay down procedure of BMS operation & alarm handling of Air handling Unit.

2.0 SCOPE:

This SOP is applicable for carrying out BMS operation of HVAC System equipment

.

3.0 RESPONSIBILITY:

Operator/Operating Person/Executive Engineering

3.1 BMS operator responsible for

3.1.1 To operate system as per requirement.

3.1.2 To Execute ON/OFF command to start & stop the AHU as per requirement.

3.1.3 To ensure that the required environmental condition are maintained during operation.

3.1.4 To report excursion in environmental condition to user if noticed.

3.2 Operating Person/Executive responsible for

3.2.1 To review records, trends, alarms.

3.2.2 To ensure smooth working of BMS system in coordination with operator.

3.2.3 To ensure operational / controlling value of set parameter & ON/OFF command of BMS as per requirement.

4.0 ACCOUNTABILITY:

Head – Engineering

5.0 ABBREVIATIONS:

HVAC	Heating ventilation and Air conditioning
Ltd.	Limited
AHU	Air handling unit
Pvt.	Private
QA	Quality Assurance
SOP	Standard Operating Procedure
BMS	Building Management System
PC	Personal Computer
CHW	Chilled water
HW	Hot Water
RAT	Return Air Temperature
RH	Relative Humidity

SP	Set Point
VFD	Variable Frequency Drive
REM	Remote mode
CMD	Command
O/P	Output
CNC	Control not classified

6.0 PROCEDURE:

6.1 Ensure all the utilities such as chilled water / Hot water / steam & Electrical Power should be available and in ON condition at the time of BMS operation.

- Chilled water temperature <12˚C
- Hot Water temperature > 25˚C

6.2 Ensure all the By Pass valve of chilled water & Hot water of AHU should be in “off” position during BMS Operation.

6.3 Ensure all AHUs selector switch should be in auto mode during BMS operation.

6.4 Ensure all AHUs drive should be in REMOTE mode.

6.5 Only authorize user can login to BMS PC.

6.6 Open the window of PC and select the application “enteliWEB” from desktop.

6.7 BMS system functions through “enteliWEB” system software.

6.8 The “enteliWEB” open application will start by click on the icon at the desktop. After initializing the icon of application below screen will appears.

6.9 The "enteliWEB" application has three level authorization as per the below sequence.
"Operator"
"Supervisor"
"Manager"

6.10 Enter the name of authorized user with password below screen will appear.

6.11 After logging the level of authorization login the above screen below screen will appear.

6.12 After level of authorization login below screen will appear.

6.12.1 Click on the Aseptic AHU summary, after which below screen will appear as below.

6.12.2 This screen shall display in the form of summary sheet along with the AHU ID & RUN STATUS, EMERGENCY STATUS, RAT VALUE, ON/OFF CMD, RAT SP, CHW O/P, RH SP, HW O/P & VFD SPEED.

6.12.3 "ON/OFF" command shall be displayed through green & red indication on "ON/OFF" CMD.

6.12.4 CHW O/P & HW O/P valve will show valve opening in percentage (%).

6.12.5 Now "START/STOP" the AHU as per sequence mention in reference SOP. "START/STOP" status shall be viewed on Run status.

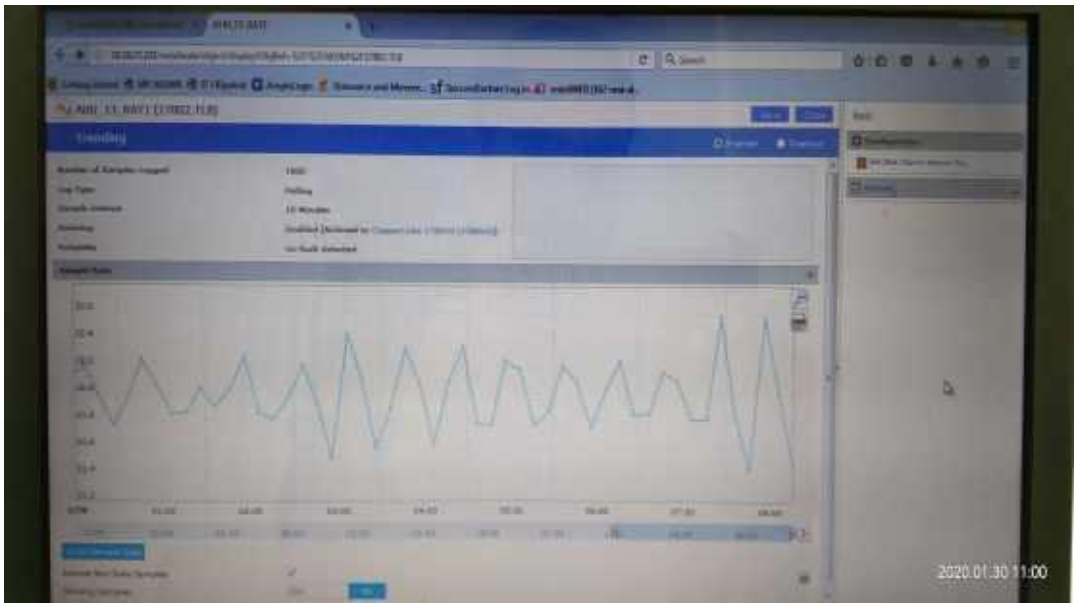
6.12.6 Click on "Sine wave" symbol shown at prefix of RUN status. We can view the active & inactive mode of AHU timing, also we can monitor active & inactive mode from ON/OFF command.

6.12.7 Ensure that all AHUs are in "ON" condition through BMS.

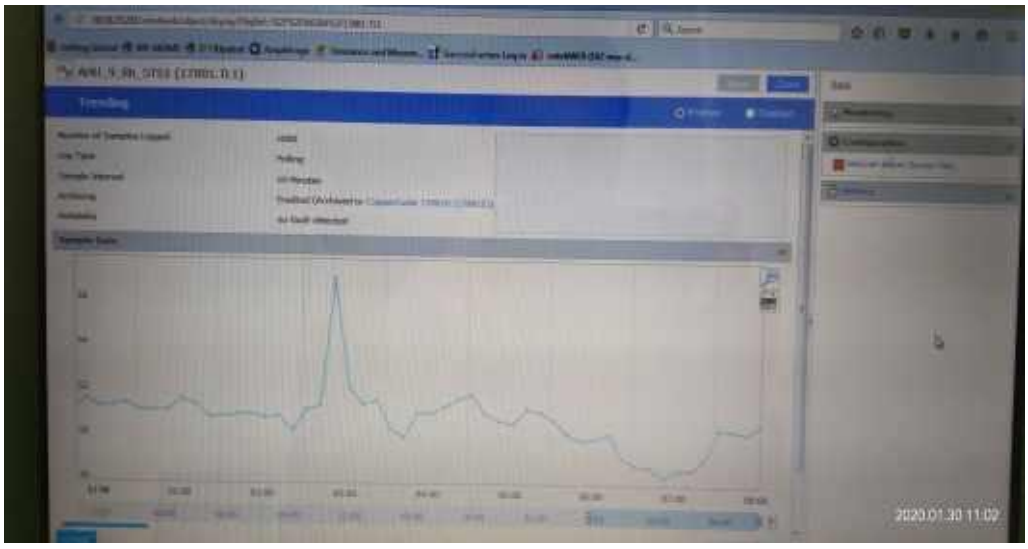
6.12.8 Check the condition of temperature & RH on display.

6.12.9 Set point shall be changed for environmental parameters as per user requirements specification.

6.13 To read the trend of return air temperature (RAT) with respect to the time “click” on “sine wave” shown at prefix of RAT value displayed on AHU summary display.



6.14 To read the trend of relative humidity with respect to the time “click” on the “sine wave” shown at prefix of RH value displayed on AHU summary display.



6.15 To read the critical value of aseptic area’s AHU, click on “ASEPTIC CRITICAL VALUE”. Below screen will appear.

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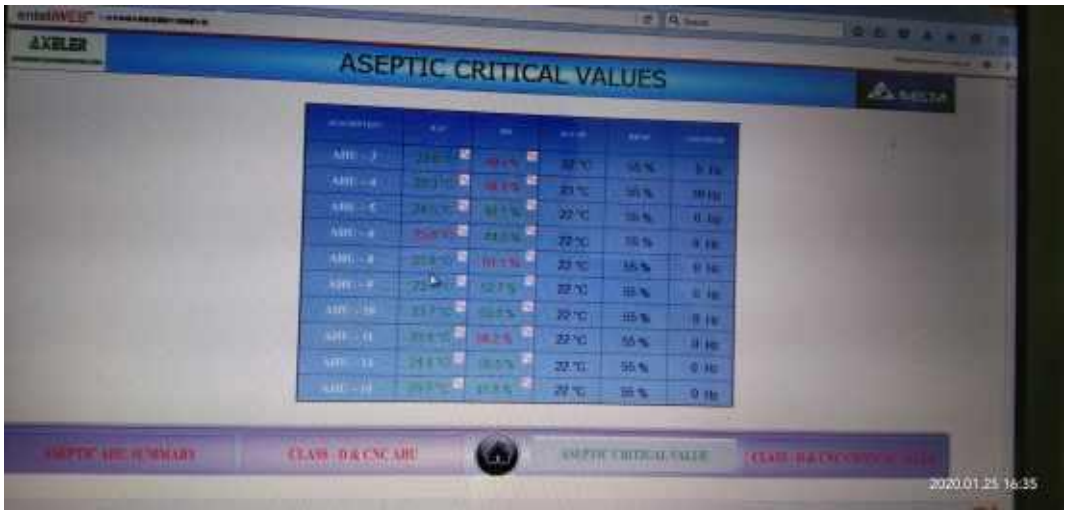


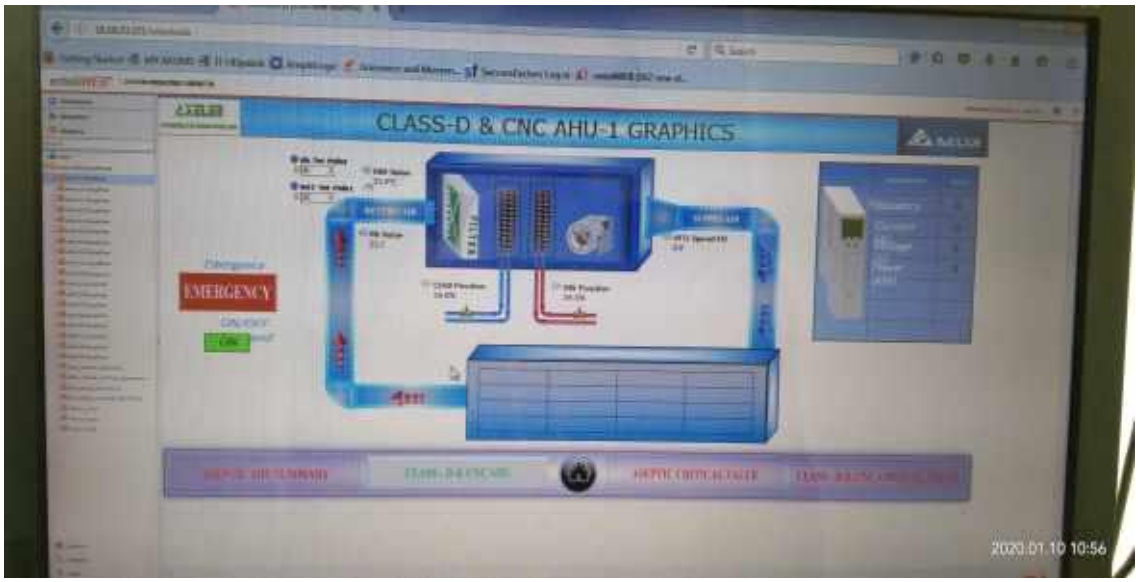
6.16 From here we can set the parameters of return air temperature & relative humidity as defined in **Annexure-I.**

6.17 To read and change the alarm limit for both area's (aseptic, class D & CNC), click on alarm limit and then below screen will appear.

6.18 Find all AHU's graphics on below screen of GRAPHICS window.

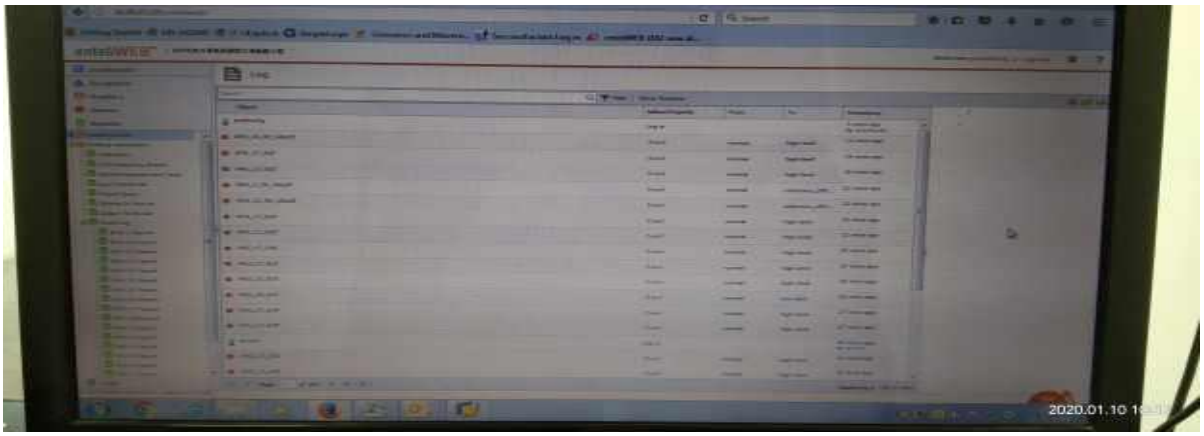
6.19 Select the AHU number of which the graphics need to view.

6.20 Graphics will appear on screen, from which we can view all the parameters of desired AHU.



6.21 For the generation of report, click on "Reports/ Building Automation/trend log". Here we can generate the report of required AHU.

6.22 To read the log report "click" on log from which we can see the user login with time by name of user & also the event log of all type of alarm can be view with time.



6.23 Alarm Management :

6.23.1 BMS system is installed to control & monitor temperature & relative humidity of HVAC system in production area. BMS system works on predefined set parameters (Annexure -1).

6.23.2 Alarms are generated automatically in event summary. Operator can view the alarm & acknowledge the same. Start time, acknowledgement time, along with date of alarm is also listed in the summary event.

6.23.3 All AHUs and BMS system is designed run continuously without any interruption in environmental condition as required.

6.24 BMS alarm Classification:

6.24.1 After alarm logged in system, operator has to acknowledge the alarm and put the comment with actual reason.

6.24.2 After logging the alarm with actual reason, operator has to rectify the same.

6.24.3 If the observed parameter (Temp. & RH) exceed beyond the set limit, then the value displayed in red color on the screen & if the observed parameters well within the set point limit then green color displayed on the screen.

6.24.4 Range of temperature shall be < 25 ˚C & relative humidity shall be < 60 %. If the parameter goes exceed this limit alarm shall be generate.

6.24.5 "Critical" alarm can be defined as "excursion in environment condition, as it may impact on product/material during processing.

6.24.6 "Non-critical" alarm can be defined as "excursion in environment condition" as it may impact on product/material during processing.

6.24.7 Then user dept. & QA personnel shall access the impact of failure of environmental conditions on quality of product/ material in the area at the time of alarm occurrence.

6.24.8 If alarm is going to have impact on product/material, appropriate action shall be taken as per SOP after discussion with user dept. head, engineering head & QA head.

6.24.9 If critical alarms are because of any repair or failure of utility - Power, HVAC system, chilled water system, hot water generation system or boiler system than corrective action shall be taken immediately.

6.24.10 After intimation the alarm to user, if it was found that alarm(s) is due to following operation at facility, then those alarms shall be considered as non-critical in nature hence no further investigation or impact assessment required.

01. Cleaning in facility.
02. Usage of water in facility for wet mopping or cleaning
03. Fumigation activity.
04. Preventive maintenance activity of AHUs & chiller system.
05. Filter cleaning activity.
06. Any validation activity for the equipment or system, a simulation activity is performed which can cause the particular activity.
07. Unloading of Auto clave.
08. SIP of filling machine & manufacturing Tank / holding vessel.

6.24.11 During operation, if BMS system is not working for any reason, immediate switch the system to manual mode with close monitoring of the parameters.

6.24.12 Alarming log shall be done only when AHU is in running condition. If the AHU is in off position, no alarm will be generated in that case.

6.24.13 If temperature & RH display is not working in any respective area, digital calibrated hygrometer shall be used by the user to verify the environment condition.

6.24.14 CNC area alarm considered as noncritical & no further investigation or impact assessment required.

6.24.15 BMS data will be spontaneously saved to server as backup data.

7.0 ANNEXURES:

ANNEXURE No.	TITLE OF ANNEXURE	FORMAT No.
Annexure - I	AHU catering with temperature & RH limit	

ENCLOSURES: SOP Training Record

8.0 DISTRIBUTION:

- Controlled Copy No. 01 — Quality Assurance
- Controlled Copy No. 02 — Engineering
- Master Copy — Quality Assurance

9.0 REFERENCES:

Not Applicable**.**

10.0 REVISION HISTORY:

Revision No.	Change Control No.	Details of Changes	Reason for Change	Effective Date	Updated By
00					

ANNEXURE- I

AHU CATERING WITH TEMPERATURE & RH LIMIT

S. No.	AHU NAME	AHU ID	FEEDING AREA	Required temperature (˚C)	Required RH (%)
1.					