

ERF-RUN-SOPRA-OPS-502, Cooling Tower Plume Abatement

1. PURPOSE & SCOPE

This document defines the safe procedure for the Cooling Tower Plume Control. It applies to **Runcorn ERF** and all persons completing this task at that site.

2. PROCEDURE

If you have any concerns, STOP – report to your line manager immediately.

2.1 Manning & Communication

Shift Operators to complete

2.2 PPE & Emergency Arrangements

Standard site PPE					
					
EN166 F	EN 397	EN 388	EN20471	EN20345:2011 S1P or S3	EN 470

2.3 Cooling Tower Plume Control

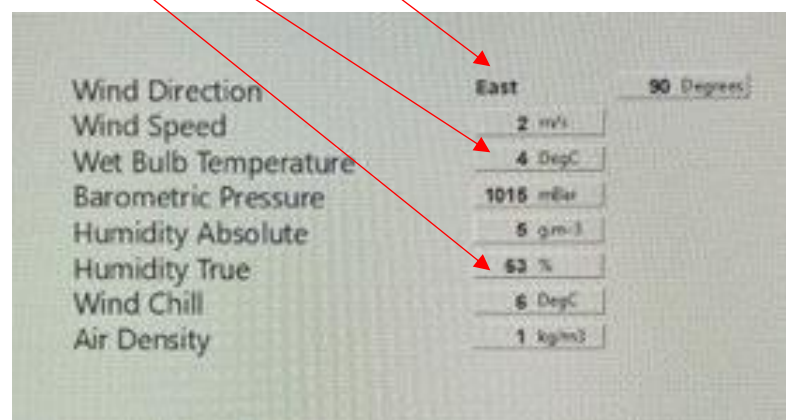
This Procedure should be completed to combat low plume level and will be triggered on receipt of information received via DCS.

CCTV is to be used to double check that a grounding event is taking place and that the plume is drifting towards the site perimeter.

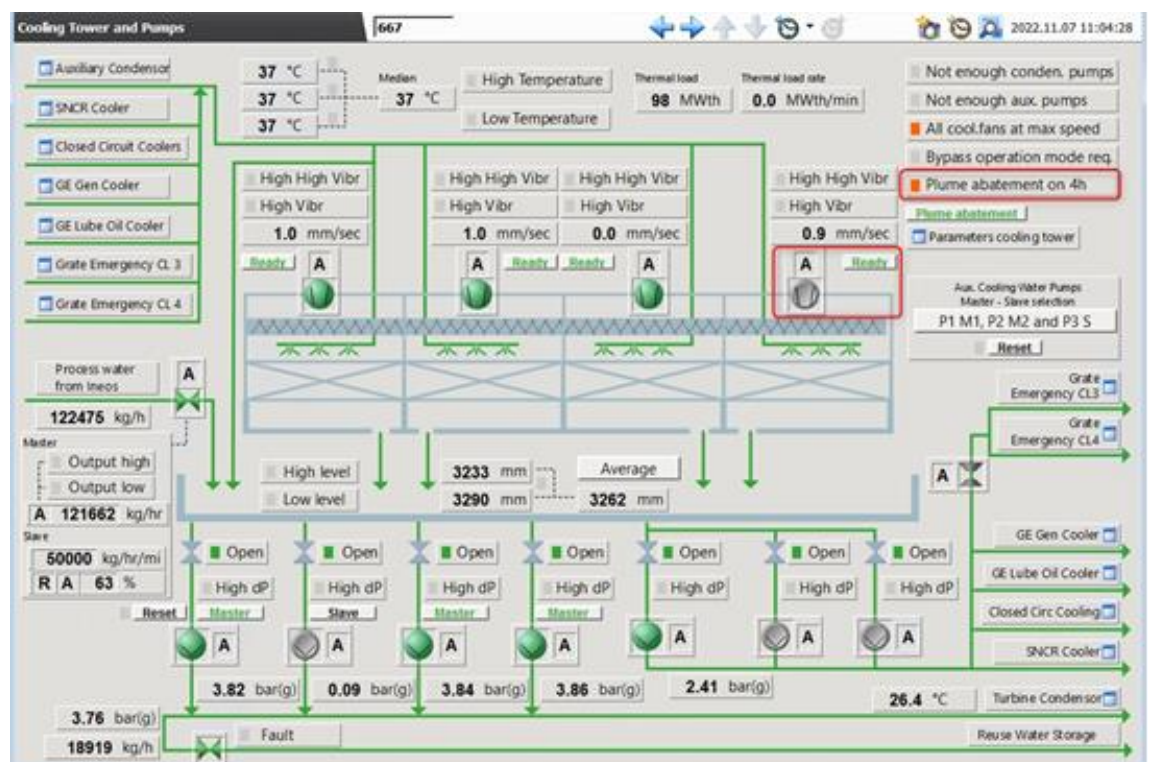
Operator is to confirm there are no irregularities with associated Cooling Tower / Condenser system.

There are three conditions that are to be met in order to initiate this procedure:

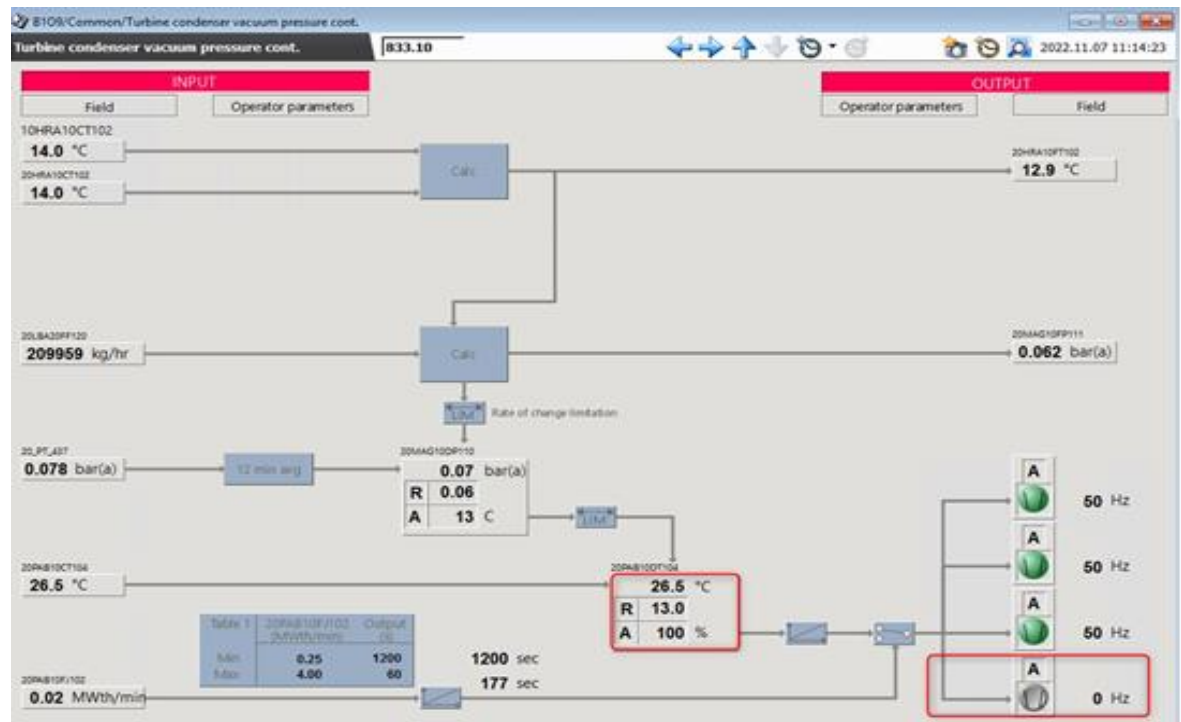
1. Wind direction from = 'N', 'NE', 'NW'
2. Temperature = Less than $< 26^{\circ}\text{C}$
3. Humidity = Greater than $> 40\%$



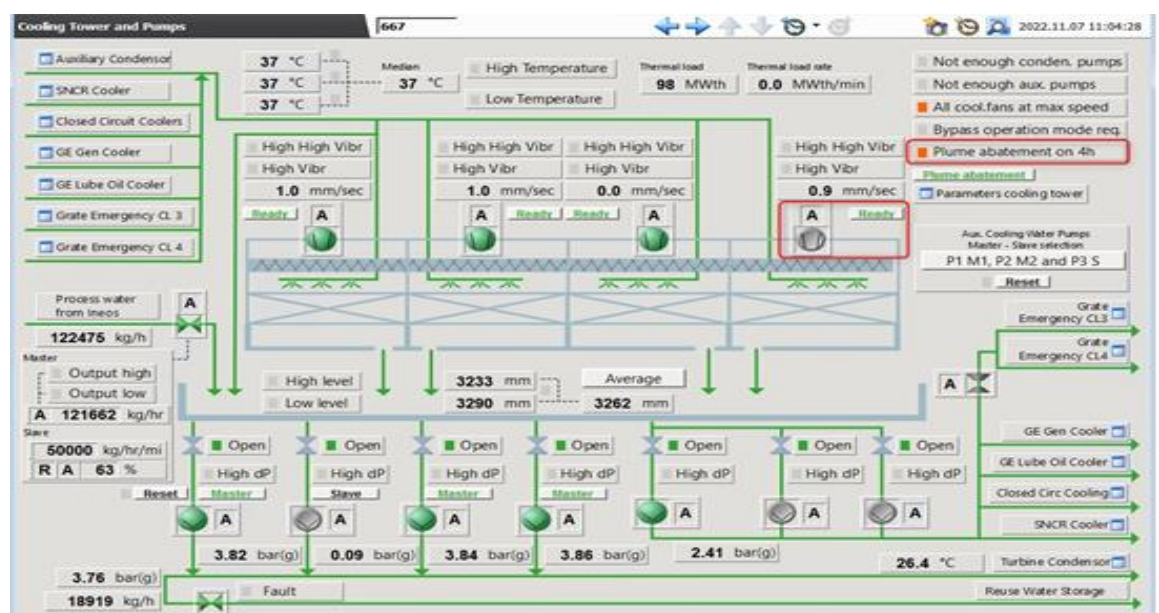
Once all conditions have been met, the operator is to select the plume abatement button.



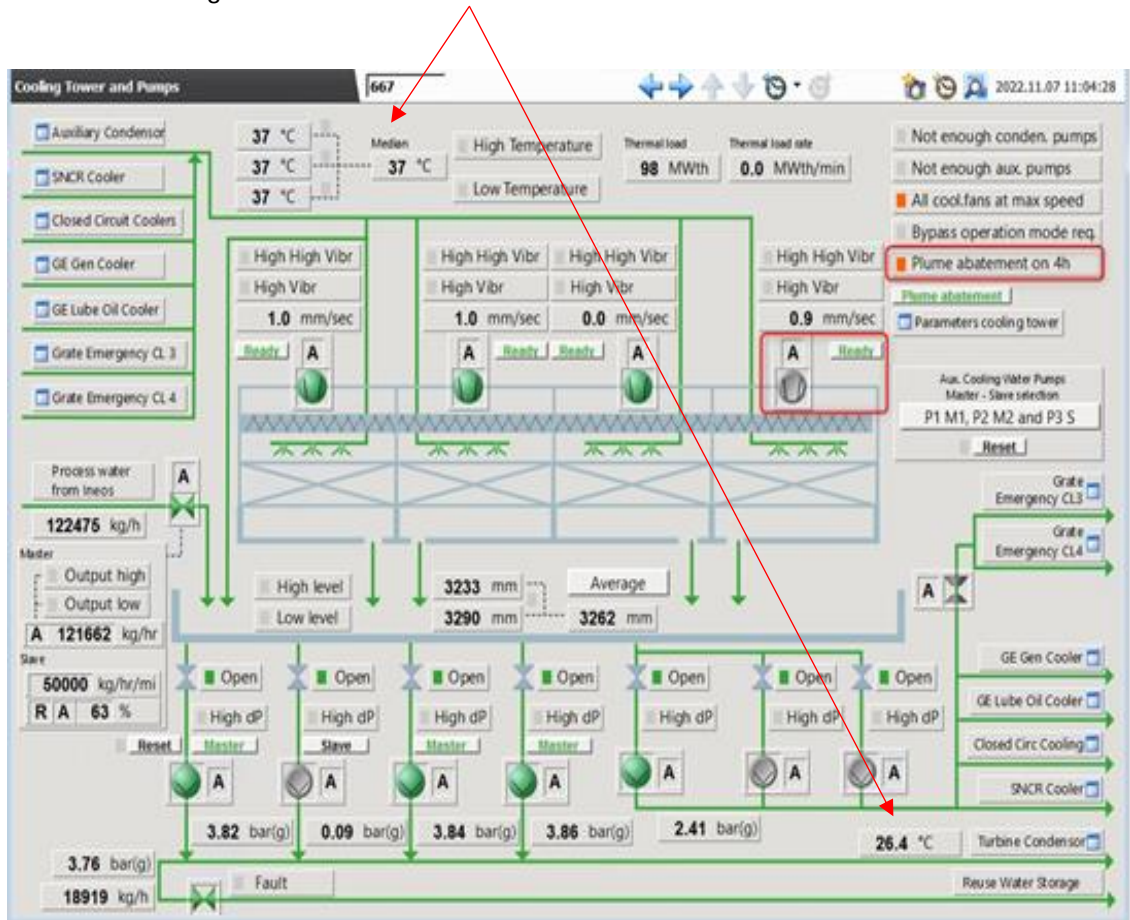
The Plume abatement button will be green when plume abatement is active.



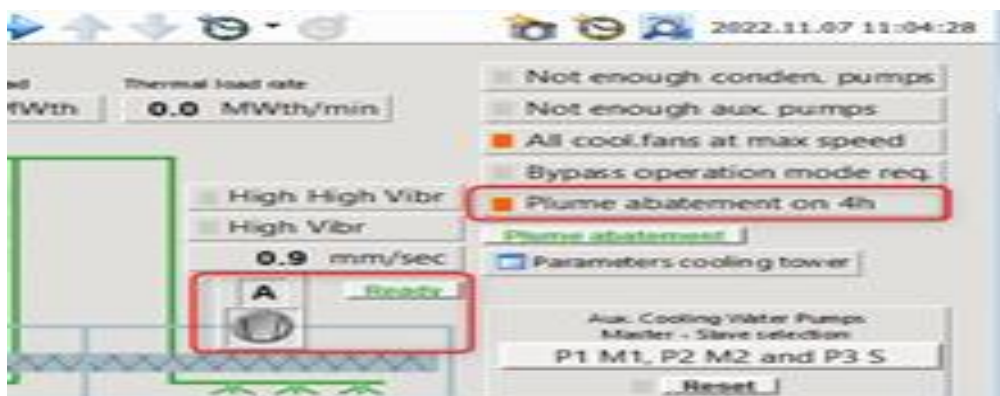
1. By default, fan number 4 is stopped in standby.
2. Speed of fan 3 is set to 100%.
3. Speed of fans 1 and 2 is adjusted according to the control.
4. If fans 1 and 2 are also at 100%, then a warning is given 'All fans at max speed'.



Although it is relevant at any time it is more significant in hot conditions to monitor temperatures across the cooling towers



After 4 hours of the abatement being active an alarm will trigger.



This alarm is triggered in order for the operator to reevaluate the conditions for plume control and either continue with plume abatement or return to normal conditions and deselect plume abatement button.

Note:

The cooling towers are designed to remove the thermal load in the design case (194,87 MW), being 120% load during turbine bypass conditions.

The maximum thermal load can be removed with only 3 cooling tower cells in operation

3. REFERENCES

DOCUMENT REFERENCE	TITLE
ERF-RUN-OPS-SHE-LMI-015	Incident Response Plan
12159_507_01_567	FD – Cooling Towers and Pumps

4. APPENDICES

NONE

To be completed in line with the **Risk Assessment** Procedure

RECORD SIGNIFICANT HAZARDS	PERSON(S) AT RISK	EXISTING CONTROL MEASURES (ECM)	INITIAL RISK RATING WITH ECM			ADDITIONAL CONTROL MEASURES (ACM)	RESIDUAL RISK RATING WITH ACM			ADDITIONAL INFORMATION
			S	L	R		S	L	R	
Provide specific details. E.g., 'work at height' say how high. E.g., "Electricity" state voltage and type of hazard, Striking underground services	Who might be harmed and how E.g., "Contractor or Employee Fall from 2.0 metres"	Detail existing control measures. These are the controls that are currently in place	S – Severity L – Likelihood R - Risk			Detail additional control measures needed to eliminate hazard completely or minimise risk to acceptable level. (Include in Site Action Plan)	S – Severity L – Likelihood R - Risk			Cross Reference & Additional Information e.g., SOP, COSHH Assessment
Carrying out cooling tower operations in the incorrect manner: Resulting in accidents/incidents Resulting in lost time Resulting in property damage	Employees, contractors, and visitors Secondary effects caused by incompetency could lead to an accident and injury specific to this, or plant/property damage	- Only trained (internal or external) and competent persons to take part in cooling tower operations - Routine walkdown checks to be completed during operation.	5	2	10	Duty STL to control cooling tower operations and ensure all persons involved are competent for the activity.	5	1	5	
Use of Display Screen Equipment Use of control room screens	Employees, contractors, and visitors WRULDS, RSI, MSD, eyestrain, headaches	- All staff workstations are self-assessed using display screen equipment (DSE) assessment checklist with appropriate ergonomic equipment supplied when necessary - All staff (frequent Users) have regular eye tests available, as stated in regulations. - Regular breaks away from the screen are encouraged - Periodic health screening in place for employees.	3	2	6					DSE Assessments