

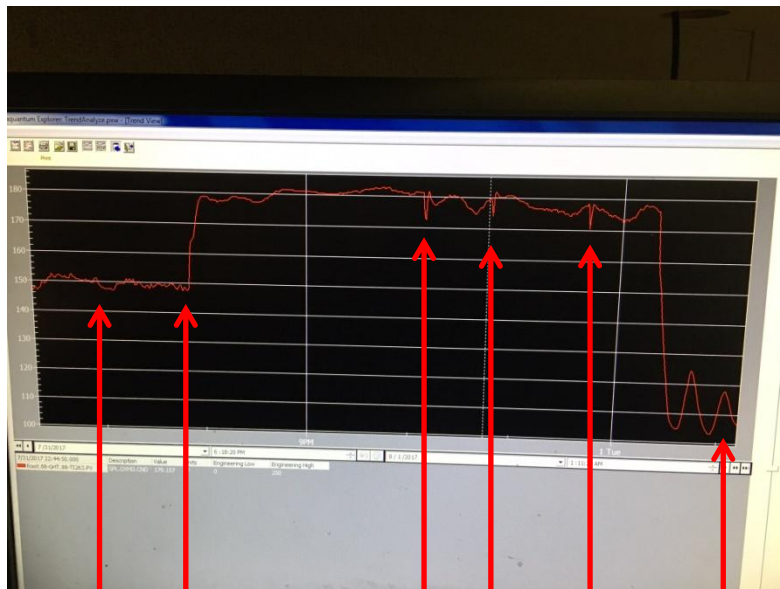
Case Studies – On-Line dry chemical cleaning of Air Coolers

(1) Forced-draft fans, night shift (TX, USA)

4 forced-draft fans were on-line cleaned.

The left picture shows the way it looks from the ground, there is very little opacity and a minor white cloud. The right picture shows how the process outlet temperature drops after each fan been cleaned, and the final temperature drop after all 4 fans have been cleaned.

The process outlet temperature was dropped from 150F before the cleaning to 105F after the cleaning (-30%)



Starting point
@ 9:00PM

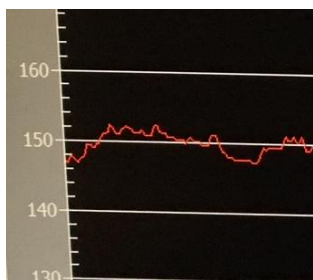
1st fan
off

2nd fan
off

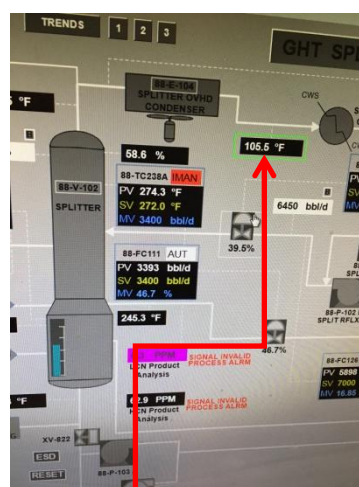
3rd fan
off

4th fan
off

New
reduced
outlet
temp @
1:00Am



Process outlet temperature
before the cleaning: 150F



Process outlet temperature
after the cleaning: 105 F

(2) Induced-draft fans, steel fins (OH, USA)

Note the difference between dirty and dry-cleaned fins.

Our On-Line dry chemical cleaning process does NOT damage the fins.



Before cleaning



After cleaning



Dirty

Vs.

Clean

(3) Induced-draft fans, aluminum fins (CA, USA)

Note the difference between dirty and dry-cleaned fins.

Our On-Line dry chemical cleaning process does NOT damage the fins.



Clean

Vs.

Dirty

(4) Induced-draft fans, aluminum fins (MT, USA)



Half-clean, half-dirty fins



Before cleaning



After cleaning

(5)

//quote//

Sorry for taking some long to give you this information. Here are the functional location of the fin fans.#4
AVGO- SouthWest-004-0042-BB, North west 004-0043-AB, (S)East 004-0042-BA, (N)east 004-0042-AB. LVGO-
(N)west 004-40-1A, 004-0040-1B, HVGO-(S)west-004-0041-1A, (S)East 004-0041-1B. #8 unit Diesel Product
113BB, 113AB, 113BA,113AA. HHPS 114BB,114AB,114BA,114AA

You all done an excellent job on all of the fin fans. It was done safety and in a timely manner. Temp. drop on
all of the fin fans. Appreciate all of you all work.

Thanks

//unquote//

(6)

//quote//

“..... Everything has went well. They'll be finishing up shortly. If we want Al and the crew back tomorrow to hit
a couple of more fans...”

//unquote//

(7)

//quote//

Hello (-)

The test with the fin fans here at NexenLong lake was a success and we would like to schedule you in to clean
another 70 Fans.

Can you provide myself and John a quote for this work and we can set a date please?

//unquote//

(8)

//quote//

fin fan air coolers: After the cleaning - outlet temperature reduced by 77-86F (25-30C) and vacuum
significantly increased.

//unquote//

(9)

//quote//

Hi (-),

Regarding your visit to Sasol Secunda complex and the work that you guys performed for us, I would like to extend my gratitude for the manner in which you performed your tasks!

- Safety

- o I really appreciated it that you were so safety conscious. Seeing that this is completely new to the Sasol environment, your guidance in the safety measures that needed to be put in place was highly appreciated and respected. The task was done safely and even when we had a small hiccup, you quickly made a plan to work more safely.

- o You also respected our safety and governance processes and adhered to them.

- Technical

- o The tasks were done with a high level of professionalism. We could see that you really believe in your cleaning method and that you take your job seriously.

- o The good results on the heater parameters also indicated the success of the project.

- o Your enthusiasm to add value on other units within Sasol was also evident.

- Overall

- o Even though it took a while to get you badged and into the plant, you guys always remained friendly and professional. The job was done safely and to a high technical standard. It was a joy to work with you.

All the best and thanks,

//unquote//

(10)

//quote//

To whom it may concern,

The furnace on line cleaning (F7101 A/B/C) of both the radiant and convection bank of Crude Distiller 2 and the fin fan bank (E7209) was successfully done from Monday until Saturday.

SENTRO performed this activity with the highest degree of competency and safety. In addition the housekeeping was excellent.

The final benefit with regards to BWT (bridge wall temperature) is 80 degrees and 25 degrees benefit with regards to stack temperature. The benefit would have been higher if there were more accesses to the convection bank.

The fin fan bank of E7209's were cleaned. Prior to the cleaning the fan pitch was at 100%, the feed rate was at 260 t/d and we were flaring. Soon after the cleaning the fan pitch was at 20%, the unit feed rate increased to 340t/d and there was no flaring,

Kindest regards

//unquote//