

## **Teamwork lead to successful flushing project in Brazil**

By Lubritech do Brasil

I want to share information with you all about a large flushing job we performed in Brazil this year. This was the first time that this customer decided to perform this type of work with an external company, and we would like to share with you the complete history from how we identified the opportunity, how our commercial team worked on the process, and how the operational team performed the job with the help of our people from México and Venezuela.

### **Problem identified:**

In 2013, maintenance personnel from a large chemical company in Brazil visited our booth at the Power Gen Exhibition in Sao Paulo where they mentioned that they had contamination problems in the lubrication systems of the centrifugal compressors in their ethylene units.

Apparently, they have always carried out a flushing process in their turnarounds, but have only used the compressor lubrication system pumps and filters to perform the cleaning. Following the previous year's turnaround, they noticed that they still had contamination problems in at least two compressors, where the root cause was identified as a poor flushing procedure in the previous turnaround.

### **Solution proposed:**

After listening to the voice of the customer, in October 2013, we held a mini-seminar with them in order to share best flushing practices.

In this seminar, we learned they had scheduled a turnaround for September 2014 and that they would be interested in improving the flushing procedures in seven critical centrifugal compressors in the ethylene units included in the turnaround.

We presented the main differences between the process they had been utilizing to perform flushing in the past and the best practices according to ASTM D-6439-05 along with Reliability Services' experience with this type of service. We highlighted four main points that would provide better results, which were:

- The use of external pumps to increase the oil velocity in order to achieve a turbulent flow, which allows for rapid dirt removal
- The need for high efficiency filter elements to retain the dirt removed
- The recommended use of portable oil analysis equipment to determine the cleanliness level on site

- The recommendation for four flushing teams (skids & personnel) to perform the flushing processes on all compressors within the given timeframe

The customer soon realized that with this new information, they would be able to achieve significantly better cleanliness results in less time, so they decided to include this scope in their next turnaround in the seven compressors; all of them with an oil volume of between 500 - 6,000 gallons.

### **Proposal accepted**

The customer prepared a bid offer including all the technical specifications we recommended in the mini-seminar. The only company able to reach this specification was Lubritech do Brasil due to the ability to staff and equip four working teams at once with flushing pumps of 2,200 GPM per recommendation.

We did a preparatory visit to the Unit in May 2014 to prepare the associated engineering scope, where one of our technicians from México worked on-site preparing the engineering detail for a whole week. Also from May to September 2014, our people in Brazil worked to prepare all the accessories, flanges and necessary items to be used in the turnaround.

When the turnaround started, we were very well prepared and performed the entire job without incident. Our resources in place were:

- Four flushing skids, two 500 GPM, one 1,100 GPM and one 2,200 GPM.
- Four filter housings
- Two 75 Kw electric heaters
- One portable oil analysis kit
- Ten Flushing Supervisors, which Included help from three specialized flushing supervisors from México and two specialized flushing supervisors from Venezuela.

### **Results:**

Bearing in mind that this was the first time we had performed our flushing service for them, it was very important for us that the process was carried out smoothly, and it was nice to see that the results obtained were very good following the service. The customer was very happy that the entire job was completed three days before schedule, as this was very important for them from the point of view of equipment availability.

The cleanliness level achieved in each lubrication system was better than that recommended in the ASTM Standard, which provides increased reliability for the centrifugal compressors during operation.

All the compressors started up very well, and their operation performance is according to client expectations.

During this process, the client also invited maintenance and engineering personnel from other plants in Brazil and all were very impressed with the innovative procedure we used and the corresponding results. They have all since expressed their willingness to implement these best practices for their future turnarounds.

As can be seen by this report, working together and supporting each other across our regional boundaries in order to provide the best service to our customers can only bring positive results for the whole group.



*Filter Change*



*Flushing Skid*



*Flushing skid with positive displacement pump at 500 GPM flow and filter housing with four 34" filter elements.*