

A LITTLE MORE GUNK!

by Ian Speer

The last article resulted in a considerable amount of feed back from many sources. In the end I decided to approach the three major suppliers of two stage oil flooded rotary screw compressors that are commonly used in the drilling and allied industries.

The approach was similar to that taken in the previous article and I will not labour the point aside from saying that Atlas Copco, Ingersoll Rand and Sullair were approached (in alphabetical order). I was already aware that Sullair had done work in this area after attending one of their training courses some months ago (I would recommend them to any owner).

In addition, one of the oil companies came to the party with some belated information which missed the previous article and I have included it here for completeness.

Starting with the compressor people,

ATLAS COPCO has not as yet replied and we did follow them up as this is an important matter.

INGERSOLL RAND replied as follows and I quote "Other contamination such as incorrect fluids being used can be remedied by draining the fluids from the tank, oil cooler and oil lines to and from the oil cooler. Replenish with proper fluid and operate 50 hours and repeat drain operation. Add proper fluid and change at half intervals for next change. Suggest doing an oil sample at regular intervals to determine condition of fluid and help determine when to do next change."

SULLAIR/CHAMPION

COMPRESSORS have some good

their engineering people have provided some additional advice directed specifically to the high pressure compressors. I have presented this information in full as it is by far the best treatment of the subject so far and contains clear directions for treating the problem along with some graphic pictures.

Recommended Procedure for Cleaning or Flushing Compressor When Fluid is Contaminated or Varnished

A. For clean machines presently using same fluids.

1. Drain the previous fluid from the sump, piping, filters and fluid cooler, preferably while the fluid is hot.

2. Drain the fluid filter elements.

3. Partially fill (70%) with AWF fluid, and run the compressor at normal or elevated temperature for at least 30 minutes.

4. Drain thoroughly, repeat step #3 and #4.

5. Refill compressor with a fresh charge of AWF fluid.

6. Take a sample after 24 hours of operation for analysis to check for contamination.

B. For dirty or varnished compressors

1. Drain the previous fluid from the compressor while the fluid is still hot and change fluid filter(s).

2. Partially fill (70%) with Compressor Cleaner: P/N 250029-018 (5 gal), P/N 250029-019 (55 gal).

3. Start compressor and run for two (2) hours at normal operating conditions closely monitoring filter(s), change if necessary.

4. After two (2) hours drain the cleaner completely and change filter(s) if necessary.

5. Fill compressor with compressor cleaner and allow to run for 48 to 72 hours, closely monitoring filter(s), change if necessary.

6. Drain compressor cleaner completely, partially fill with (50%) AWF fluid.

7. Run compressor one hour, drain completely and change filter(s) if necessary.

8. Drain thoroughly, repeat step #6 and #7

9. Refill compressor to recommended level with AWF fluid, Change filter.

10. Submit fluid sample for analysis after 200 hours run time.

Note:

1. During clean up, watch for differential pressure in the separator. When sump pressure becomes 10 lbs. higher than line pressure, change the separator.

2. The above procedures are for a machine that is not too badly varnished. If machine will not run or turn over because of being varnished, the compressor unit requires service.

Varnish — What, Me Worry?

Q: Why should a compressor user be concerned with varnish — Isn't it just a harmless coating in the receiver tank?

A: There are three big areas where varnish is a concern.



1. The cooler - Oil cooler tubes are fine passages already, but when you consider that the "turbulator" fins in them are only about 1/8th of an inch apart to increase heat transfer, it doesn't take much varnish or sludge to start plugging things up.

When that happens, the compressor runs hotter, and the hotter the oil gets the faster the varnish forms. I'm sure you see where that is headed.

2. The air end - There are two concerns here. The bearings are fed oil through relatively small bearing



orifices. If the oil flow to any bearing is starved by restricting one of these — it is all over.

Also, formation of a coating of varnish on the rotors or housing reduces clearances, which increases energy consumption by as much as 10% - tough on motors / engines and the fuel bill.

3. The separator – Varnish adheres to the outer wrap and to the fibers of the separator blocking air flow and shortening its life, and increasing the pressure drop across the separator.

There goes the energy consumption again, and what about the cost of the separators – and labor!



Varnish is the number one enemy of rotary compressors.

CASTROL Missed the cut-off last time but they have come up with a specific product that they make for cleaning out contaminated systems and their response was as follows (I have made several context changes for clarity only). "We do indeed have a product available for the cleaning of 'gunk', typically byproducts of oxidation, gums and varnishes, etc. The product is Tribol Metalube 1-040. In addition to the Metalube 1-

040 we can also suggest that the use of a diesel engine oil, preferably a higher TBN type product, our Castrol J-Max would be an example, run at a light load for a short drain interval, typically 200-300 hours, should also provide adequate cleaning and flushing properties."

Castrol have a detailed product data sheet which explains the application of Metalube 1-040 and of you want a copy I am sure that Dave Williams will be pleased to supply a copy if you call him on (08) 9268 9176. (Sorry I only have a WA number but after all WA is the centre of the drilling business!!!!) I wonder if that gets past the editor?

Well, thanks to Castrol, Sullair and Ingersoll Rand for their input.

As always without the generous sharing of information that is often hard won these articles would not be possible.

I would like to thank everyone who has responded favorably or otherwise to any of the articles written over the past 12 months for taking time to do so. It can be a lonely job typing out articles if there is no feedback.



Finally I would like to wish all of the readers of the magazine the compliments of the season and safe and prosperous New Year.

Ian Speer.