CLEAN OIL
BRIGHT IDEAS

Gear Oil
Coal Mill, Gearbox, MAAG Gear

CJC™ Application Study

Application Study written by:

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in cooperation with

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Maintenance Planner

2014

CUSTOMER

Coal Mill, Ireland.

SYSTEM

System: Coal Mill gearbox
MAAG gear type: WPU-27/C
Oil Type: Castrol Alpha SP 320
Oil Volume: 2,500 ltr

Coal is fed into the mill to be grinded to a fine powder, which is used in the burner for heating the kiln.

PROBLEM

Oil analysis from July 2014 indicated a very high particle count, ISO 23/21/15, mostly metal wear and coal dust. Chemically the oil was in good condition, it just needed to be cleaned.

SOLUTION

A **CJC™ Fine Filter HDU 27/54 PV-DE2P** with an **Oil Contamination Monitor, OCM 15** (an online particle counter) and 2 CJC™ Filter Inserts B 27/27 were installed. It was agreed with the customer to install the CJC™ OCM 15 to be able to follow the progress of the cleaning level.

TEST

From July until installation of the CJC™ Oil Filter in September (2 months), the amount of particles increased 4 times. The CJC™ Oil Filter was installed on the 19th of September 2014, and oil samples indicated an ISO Code 25/25/21, with 36 mio. particles of 4 μm and bigger.
With the CJC™ OCM15 we followed the ISO code every hour, in order to monitor removal of the particles. In only 5 days (120 hrs), the ISO Code was reduced to 16/15/11, meaning from 36 mio. particles down to 54,115 of 4 μm particles.
However, the oil filter was stopped for 1½ day (36 hrs), and started back up with an increased ISO Code of 19/17/13, 258,025 particles of 4 μm (5 times more in only 36 hours.) It took 3 days (72 hrs) to reduce the amount of particles to an ISO Code 16/14/11.
As a consequence of the oil filter stoppage during 36 hours, it took 2 times longer to remove the particles that had been generated during this break.
From start to finish, a reduction of 99.94% in the amount of particles.

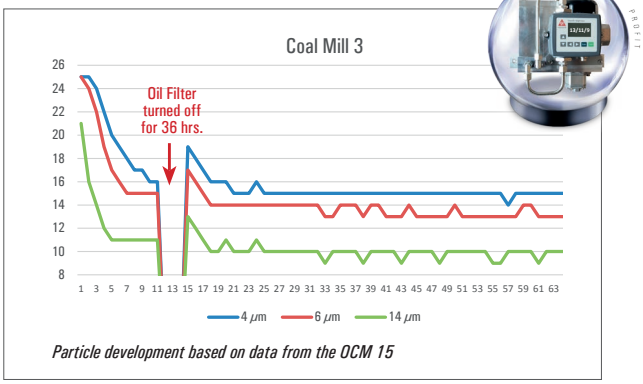
RESULT

Contaminated oil results in wear and tear on gears and equipment failure. With clean oil, the risk of gearbox breakdown and plant shut down is minimized, increasing the reliability and the production of the entire coal mill. Furthermore, less unplanned maintenance work, results in less risk of work accidents.

A Reliable Plant is a Safe Plant!

Coal Mill, Ireland, Gearbox, MAAG Gear with installation of CJC™ Fine Filter HDU 27/54 PV

PARTICLE DEVELOPMENT



Particle development based on data from the OCM 15

RESULT

Date	No. of 4 µm Particles	ISO Code	Remark
19.09.2014	36 mio	25/25/21	Start up
24.09.2014	54,115	16/15/11	120 hrs
25.09.2014	Oil Filter off	Oil Filter off	Oil Filter off
26.09.2014	258,025	19/17/13	132 hrs
11/10 2014	28,000	15/13/10	492 hrs
23.10.2014	18,000	15/13/10	780 hrs

An extract of the ISO Code report based on data from the OCM 15
The cleanliness of the oil is registered every 12. hour

CUSTOMER COMMENTS

Mr. Frank Hughes, Maintenance Planner:
"I was surprised, when the CJC™ Oil Filter was stopped, that the particle count went up so quickly and that it took 2 times longer to get it back down again. Which made me realize that a permanent installation of the CJC™ Oil Filter was a must, to be able to have a very clean oil system. We have removed 99,9 % of the dirt, and the oil filter still has not blocked. Amazing!"

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