



## Eaton's super flexible, very high pressure spiral hose helps continuous miners reduce downtime

**Location:**

South Africa

**Segment:**

Underground Coal Mining

**Challenge:**

Assuring uptime for continuous miners in operating in highly abrasive environments.

**Solution:**

Eaton's Aeroquip X-FLEX very high pressure spiral hose.

**Results:**

Eaton's Aeroquip X-FLEX hose has been performing to expectations and helping manufacturers servicing continuous miners meet their contracted coal extraction rate terms by increasing uptime and decreasing maintenance and service times.

**Contact Details**

Jorge De Lima

Eaton – Team Lead Sales for Southern Africa

+27 (0) 11 961-2472

jorgedelima@eaton.com

**Background**

South Africa is one of the ten largest coal producers and the fourth largest coal exporting country in the world. As the coal seams here are buried too deep beneath the ground for opencast mining, they are deep mined using a room and pillar technique. The mine site is divided into a series of rooms that are cut into the coal bed using continuous miners; these machines extract the coal whilst digging a hole at the same time and can mine as much as five tons of coal a minute. Once the coal is removed, the ceiling is shored up with pillars to prevent it from collapse.

Downtime on these continuous miners could cost the mine up to \$10k/hour in lost production – a cost so incredibly high that some mines measure this downtime in minutes. There are many factors that can cause downtime, but the majority of cases are due to hydraulic hose assembly failure.

"Eaton's route to market for South Africa's mining industry

is through a distribution network for which we supply hydraulic assemblies, fittings and accessories," explains Jorge De Lima, team lead sales for Southern Africa for Eaton's Hydraulics business. "Many of these companies are contracted by the mine to ensure that the continuous miners meet or exceed a certain rate per tonne of coal extracted, which is why avoiding downtime is of the utmost importance."

**Challenge**

The area on a continuous miner where most breakdowns occur is on shear cylinders that move the cutting bobbin. Upon daily servicing, these areas are cleared of coal debris and the assembly is checked for any cuts, signs of abrasion or visible leaks from the threaded connection. In disciplined sites, the preferred hose used on these machines is Eaton's GH506, which offers excellent performance when cleaned and serviced regularly. The hose end fitting features a special wire trap design that requires

the hose to be both externally and internally skived to help ensure hose and fitting integrity under impulse conditions.

"At one particular mine site, which operated several continuous miners, the total annual downtime caused by the failure of hydraulic hose assemblies was 9,000 minutes- this equates to approximately \$1.5M in lost production," recounts De Lima. "Here, the servicing regime had gradually relaxed over time and the hose assembly was failing."

**Solution**

While the supplier was contracted to ensure that the continuous miners met or exceeded the set rate per tonne of coal extracted, it couldn't influence the rigor of the daily service regime. To overcome this challenge, the supplier replaced the original GH506 hose assembly with Eaton's higher specification Aeroquip® X-FLEX hose.

X-FLEX features a rugged, abrasion resistant DURA-TUFF cover, which provides longer



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life in this abrasive environment compared with the original high pressure hose. In addition, it provides a 46 percent reduction in force-to-bend ratio, which made it easier for the supplier to handle in the shop, and less time consuming to fit on the equipment.

When used in conjunction with one-piece Aeroquip global spiral TTC crimp fittings, the X-FLEX hose assembly is also easier to build since skiving is not required.

### Results

“On replacement of this original hose assembly with Eaton’s Aeroquip X-FLEX very high pressure spiral hose, duty time increased considerably and downtime for the mine was reduced by 2,000 minutes,” says De Lima.

Squeezing lost production costs by \$333k, by simply replacing a hose, is very attractive for the mine and indeed the supplier. With supply and service of these mine sites in the region of \$50k/month, the mine has effectively saved and recovered its spend.



Eaton Aeroquip® FC500 X-FLEX™ Spiral Hose

**Eaton**  
Hydraulics Group USA  
14615 Lone Oak Road  
Eden Prairie, MN 55344  
USA  
Tel: 952-937-9800  
Fax: 952-294-7722  
[www.eaton.com/hydraulics](http://www.eaton.com/hydraulics)

**Eaton**  
Hydraulics Group Europe  
Route de la Longeraie 7  
1110 Morges  
Switzerland  
Tel: +41 (0) 21 811 4600  
Fax: +41 (0) 21 811 4601

**Eaton**  
Hydraulics Group Asia Pacific  
Eaton Building  
No.7 Lane 280 Linhong Road  
Changning District,  
Shanghai 200335  
China  
Tel: (+86 21) 5200 0099  
Fax: (+86 21) 2230 7240