



## Eaton's flat-face color-coded couplings iron out contamination problems at Australian mine

**Location:**  
Australia

**Segment:**  
Mining

**Challenge:**  
Find a coupling solution that would eliminate lengthy dump truck downtime caused by contaminated lubrication lines.

**Solution:**  
Eaton® Hansen™ and Gromelle™ Flat-Face (FF) Series color-coded couplings.

**Results:**  
Eaton's FF Series quick disconnect couplings are now the standard at the mine, as well as at 14 additional mines operated by the company.

**Contact Information:**  
Shawn Hille  
Eaton's Hydraulics Group  
(440) 260-8675  
[shawnhille@eaton.com](mailto:shawnhille@eaton.com)

*"The Eaton color-coded couplings are brilliant! They don't leak!"*

Mine lubrication technician

### Background

Although 400-ton dump trucks have no problem moving in and out of iron ore mines, the beasts can easily cave when hydraulic fluid gets contaminated, causing hydraulic system failures and ultimately vehicle shutdown.

Such was the case at an Australian mine owned by a multinational metals and mining company that is a mega supplier to the world's iron ore trade. In a single year, the mine reported 214 contamination incidents on its dump trucks, requiring over 300 man-hours and hours of costly downtime and environmental cleanup.

### Challenge

The company realized that contaminated lubrication lines — whether due to the dusty, rugged mine environment or operators accidentally crossing lubrication lines at lube stations — had become one of its biggest and most expensive problems at the

mine and that corrective action was badly needed.

Before anymore time and money were lost due to fixing problems caused by contamination, the company implemented an all-out effort to reduce contamination and called in an Eaton distributor for a coupling solution.

Eaton's distribution partner learned that the mine had a solid list of wants. Maintenance personnel explained that an ideal coupling would be easy to clean and have excellent flow, even when carrying extremely viscous lubricants. They also wanted the coupling to be easily identifiable to the operator in order to avoid improper connections that could mix fluids.

### Solution

With all parameters before them, Eaton and the distributor's personnel worked closely together to find an appropriate solution that would provide value

**EATON**

Powering Business Worldwide

Eaton Corporation is a diversified power management company with more than 100 years of experience providing energy-efficient solutions that help our customers effectively manage electrical, hydraulic and mechanical power. With 2011 sales of \$16.0 billion, Eaton is a global technology leader in electrical components, systems and services for power quality, distribution and control; hydraulics components, systems and services for industrial and mobile equipment; aerospace fuel, hydraulics and pneumatic systems for commercial and military use; and truck and automotive drivetrain and powertrain systems for performance, fuel economy and safety. Eaton has approximately 74,000 employees and sells products to customers in more than 150 countries. For more information, visit [www.eaton.com](http://www.eaton.com).

beyond the customer's original requirements and to conduct test and field trials alongside the customer.

Their first recommendation was Eaton's Hansen and Gromelle Flat-Face (FF) Series quick disconnect couplings offering dry-break connections for contamination-sensitive applications. Unique features of the coupling series that meets or exceeds the ISO 16028 standard include: QPQ finish on the sleeve and plug nose, extra heavy knurling to provide a non-slip grip and a beveled sleeve design with standard locking mechanism to prevent accidental disconnection.

Mine site engineers liked Eaton's FF Series coupling solution, but they wanted more. They envisioned that each coupling half on the trucks would have a unique color that would match the corresponding coupling half on a specific oil dispensing unit, thereby eliminating the risk of an operator mismatching lubricant lines.

With close customer interaction, Eaton added rings to the couplings that were color-coded to allow each connection to be visually matched and to serve as the foundation for a complete lubrication dispensing system. The rings also provided a wide

surface area for operators to grip, making it easier to connect and disconnect the couplings. Testing confirmed that the rings would withstand tough duty in the rugged mining environment.

All dump trucks at the mine were then equipped with Eaton's FF Series color-coded couplings, as well as the oil supply pumps at lube stations. Distributor personnel remained at the ready to gain user feedback and work through any additional product improvements.

### Results

With all its performance criteria tested and met, the company made the decision to standardize on Eaton's FF Series couplings throughout its entire lubrication system.

The changeover to the Eaton couplings has resulted in important benefits. The mine increased machine uptime by approximately three percent, eliminated contaminated lubricant replacement costs and reduced annual maintenance costs.

The couplings' color-coded rings that can be added on demand have eliminated the mine's use of multiple sizes and styles of couplings to prevent cross connections, thereby reducing fitting inventory costs.



*Color-coded rings on Eaton's FF Series couplings allow immediate identification of circuits, helping to reduce the risk of accidental connections.*

"We are extremely pleased with the flat-face couplings," said the mine's conditioning monitoring specialist. "It's a true flat-face coupling and better than anything we have seen."

The mine's primary lubrication technician agreed. "The Eaton color-coded couplings are brilliant!"

They don't leak!"

Because of their endorsement at the mine — which sets the standard for other company mines — Eaton's Hansen and Gromelle FF Series color-coded couplings are now the standard at 14 additional mines operated by the company.

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