Conveyor Belt Fire Detection Solutions

Risk analysis and fire prevention key components in the elimination of conveyor belt fires

Inside:
- Mine Site Accommodation Solutions
- Pumps
- Structured Slope Monitoring
- Payload Management
Conveyor Belt Fire Detection Solutions
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Cover picture: Conveyor system at a coal plant

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Contents
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REGULARS
1 THE EDITOR’S NOTE
2 NEWS / ASSOCIATION NEWS
4 NEW PRODUCTS
5 EVENTS
6 GUEST

OTHER STORIES
18 IMPACT OF THE CONVEYOR BELT FIRE ON THE CONTINUITY AND PROFITABILITY OF THE MINE IS HUGE
36 CHOOING THE RIGHT PUMP FOR THE JOB IS IMPERATIVE

Botswana Office
Callline (Pty) Ltd.
P/Bag 494 Gaberone, Botswana.
Tel: +267 318 7101
Fax: +267 318 102
E-mail: botswana@groupafricapublishing.com

China Office
Hangzhou Oversea Advertising Ltd
55-3-703 Guan Lane, Hangzhou,
Zhejiang 330000, China
Tel: +86-571- 87063843
Fax: +86-571-732-4816
(retrievable worldwide)
E-mail: china@groupafricapublishing.com

Kenya Office
Northwest Ventures Ltd
P.O. Box 16414 Nairobi 00100 Kenya
Tel: +254 20 2679809,
2678688, 2002195
Email: kenya@groupafricapublishing.com

Malawi Office
Centre for Media Advocacy
P.O. Box 1732, Blantyre, Malawi
Tel: 2659954854
E-mail: malawi@groupafricapublishing.com

Nigeria Office
B23/24, Abibetu Emovony Plaza
195, Iju Water Works Road,
Ibadan (Irea), Apapa, Lagos.
Tel: 234-1-7376560
E-mail: nigeria@groupafricapublishing.com

Ghana Office
Image Consortium Limited
1st Floor, The Trust Bank Building,
Tesano
Tel: 233(0) 302 232 728
Fax: 233 (0) 024 882 8286
Email: ghana@groupafricapublishing.com

Zimbabwe Office
CMC Media Publications (Pvt) Ltd,
P.O. Box 4888, Harare, Zimbabwe.
E-mail: zimbabwe@groupafricapublishing.com

Rwanda Office
Kolline & Hemed Inc., B.P. 3328,
Kigali, Rwanda
Tel: +250 03 748106
E-mail: rwanda@groupafricapublishing.com
Website: www.kollinehemed.org

Tanzania Office
Daas Agencies Ltd
P. O. Box 96061 Dar es Salaam
Tel: (022) 2124328,
Fax: (022) 2124328,
E-mail: tanzania@groupafricapublishing.com

South Africa Office
College Publishers Ltd
1st Floor, No.267 Oak Street,
Oakhills, Randburg
Tel: +27 11 781 4275
E-mail: southafrica@groupafricapublishing.com

Uganda Office
Smg Uganda Limited
Kamukama Plaza, Entebbe Road
Kampala-Uganda,
Tel: +256 774 079 804,
uganda@groupafricapublishing.com

Zambia Office
Dayflex Limited, 4th Floor
Tazara House
Dedan Kimathi Road, Lusaka,
Zambia.
Tel: +260 211 230 529 / +260 977 756 663
Email: makukasuemail.com
E-mail: dayflex06@gmail.com
If you may have noticed, from being regarded as nothing beyond a mere attachment on a haul truck, truck bodies now contribute towards optimising productivity in open cast mines worldwide. And even more striking is that most of them are lightweight.

To unearth unobserved facts about the correlation between lightweight truck bodies and productivity in open cast mines, African Mining Brief seeks the views of the managing director of Van Reenen Steel, John van Reenen, the South African manufacturer of off-highway truck bodies, dragline buckets and shovels/dippers, which has over 200 VR standard bodies working worldwide, and won the Swedish Steel Design award for its body. Recently, the company announced the launch of its Feather weight VR Truck Body, whose lightweight, van Reneen claims, enhances productivity.

On account of being 15-20% lighter than a standard VR body, the Featherweight VR Truck Body’s payload increase can be up to 3%, explains van Reenen. Also, there is significant fuel saving on the return trip, with the truck carrying less weight.

**Maintenance and productivity**

However, van Reenen fears that mines could be overlooking the fact that any lightweight truck body can only be as productive as its sound maintenance, in their quest for high productivity.

He has noticed that there is a belief - if not a misconception - that the shorter life span of lightweight truck bodies – which is half of standard versions - can be offset by sustained production increase and lower fuel consumption, which could render a lightweight truck body more cost effective.

Nonetheless, what this line of thinking might ignore is the maintenance costs incurred on the truck body in the second year after purchase. Maintenance may necessitate adding thicker steel plates in high wear areas, cumulatively, making it heavier.
over time, van Reenen points out. “The body, heavier after sessions of maintenance may result in loss of production, and an even higher fuel burn than with a body that had been fitted initially.”

Deferring purchasing a new replacement, on account of capital constraints, may result in addition of more steel to ensure that the body is functional. Unwittingly, by the fifth or sixth year, the lightweight truck body would have become as heavy as a standard body or even heavier.

“Experience has shown that a lightweight body, initially weighing 6 tons lighter than a standard body, can add more than 10 tons to its weight over the various repair cycles. Not only do these more frequent repairs reduce the availability of equipment working in the field, the hourly operating cost escalate. Ultimately, the initial capital cost saving of 20%-30% is negated,” deduces van Reenen.

**Sustaining lightweight fleet performance**

Therefore, to sustain the performance of a fleet with lightweight truck bodies, van Reenen tells mines to consider the following steps:

• Monitor that 2%-3% production increase throughout the truck’s life to ensure it is being attained;

• When the truck body goes into the workshop for maintenance, make sure the repair does not increase the weight beyond what it’s new weight was; and

• Diligently replace the lightweight body with another lightweight body at the end of its design life, which is usually halfway through the life of a truck.

Eventually, once the above-mentioned steps are followed, the marginal profit from small increase in production will counterbalance the increased cost of ownership of a lightweight body.

By and large, says van Reenen, one of the most important considerations when buying a new truck body, or replacing an old one, is to consider the cost of ownership over the life of that body. Granted, quality truck bodies may be more expensive, but considering where the manufacturer offers affordable maintenance it has the lowest cost of ownership of any truck body.

**New innovation for managing carryback**

The other new innovation is the VR heated truck body, used where carry-back is a problem. The heating ducts have been strategically placed to heat the vital areas of the truck body, from the exhaust, to 100 deg. C, thus eliminating carry-back completely. A recently installed VR heated body, on a CAT 789 truck, has increased the performance of the truck by 11%, or 18 tons per load.

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