

April 19, 2016

TO: Pennsylvania Bituminous Mining Operations

RE: Use of Firewrap Type Blanket System to Comply with Section 403(b)(3)

This letter is in response to the April 11, 2016, recommendation from the Technical Advisory Committee on Diesel-Powered Equipment (TAC) for implementing the use of a Firewrap type blanket wrap to control surface temperatures on the exhaust systems on diesel-powered equipment in Pennsylvania bituminous underground mines.

Section 403(b) -- Components of exhaust emissions system. The exhaust emissions control and conditioning system shall include the following:

- (3) An engine surface temperature control capable of maintaining significant external surface temperatures below 302 degrees Fahrenheit.

TAC Evaluation and Recommendation

Background

During the TAC meeting on July 8, 2015, Ron Vlassich from rosebud Mining brought up the issue of utilizing a blanket wrap product as an option in lieu of the widely accepted black polyimide coating on diesel exhaust systems to control surface temperature below 302° F. Another discussion took place during the January 13, 2016, TAC meeting. Royal Hydraulics provided samples of the newly designed Firewrap type blankets for demonstrations.

In the past the TAC and DEP have only accepted the Firewrap type blankets on certain exhaust components. The TAC and DEP acceptance was limited to exhaust components where access is required for maintenance or where it is impractical to polyimide coat the components such as the exhaust bellows, band clamps, inspection ports, etc.

Recently there have been improvements in the design and manufacture of the Firewrap type blankets. The manufacturers can now provide component specific blankets with a much improved, tighter custom fit and improve OEM attachment devices to keep the blankets in place on the exhaust system. Basically these new Firewrap type blankets can be designed specifically for individual components or for the entire exhaust system.

The question brought up was, “would the TAC and DEP accept these improved design Firewrap type exhaust blankets to be used as surface temperature controls on components or even on the entire exhaust system as required by Section 403?”

Investigation

On January 20, 2016, the TAC traveled to Royal Hydraulics in Cokeburg, PA, to look at a piece of diesel-equipment that had a specifically designed Firewrap type blanket installed. They also provided a cut away section of a blanket, samples of sued black polyimide wrap and polyimide-coated components.

In the past the TAC and DEP have only accepted the Firewrap type blankets on certain exhaust components. The TAC and DEP acceptance was limited to exhaust components where access is required for maintenance or where it is impractical to polyimide coat the components such as the exhaust bellows, band clamps, inspection ports, etc.

The TAC would not accept these Firewrap type blankets for use on a wider scale in the past due to a few concerns. One concern was that the attachments were not substantial enough to secure the blankets to the exhaust system to negotiate around ends or around varying size diameters components. This could result in the blanket sliding off the exhaust system and exposing areas where the surface temperature exceeded 302° F. Another concern was the fit of the blankets on these same areas was not adequate and allowed gaps in the blanket. These gaps could allow coal dust or other debris to accumulate under the blanket and cause a fire concern due to the extremely hot exhaust pipe surface. This dust or debris would not be visible unless the blanket was removed for inspection. Another concern was the blanket was not durable enough to survive mine conditions and pressure washing during the 100-hour maintenance. The black polyimide coating, when installed to proper thickness, prevented all these conditions and was the method of choice to control surface temperatures on the entire exhaust system, minus the specific components requiring maintenance or areas impractical to coat with polyimide.

There have been improvements to the design, manufacturer and fastening system on the Firewrap type blankets. The manufacturers can now provide component-specific blankets with a much improved, tighter custom fit and improved OEM attachment device to keep the blankets in place on the exhaust system. Basically, these new Firewrap type blankets can be designed specifically for individual components or for the entire exhaust system. An example was shown at Royal Hydraulics of a Firewrap type blanket wrap that had a specific part number to provide a custom fit to a particular component or exhaust system. These improvements provide the TAC with a higher level of confidence that a specific part number blanket wrap system designed for a specific diesel exhaust system can eliminate some of the previously mentioned concerns and comply with the surface temperature requirements of Section 403.

The TAC believes that for the Firewrap type blanket system to be used on new components or on the entire exhaust system, a few specific issues must be addressed for each application.

- The Firewrap type blanket system must be able to maintain the surface temperature below 302° F as required under Section 403.
- The Firewrap type blankets must be specifically designed and fitted for the model exhaust system or components.
- The Firewrap type blankets must have a part number specific to that model exhaust system and components.

- The Firewrap type blanket shall be designed to minimize the number of seams throughout the entire exhaust system.
- The seams shall be located as close as possible to the flanged fittings of the exhaust system, and provide an overlap to connect the seams so there are no exposed parts of the exhaust system.
- The OEM attachment devices must be installed to sufficiently keep the blanket wrap closed and secured so as not to allow the system to move or slide or expose any exhaust pipes.
- The Firewrap type blanket system shall be visually inspected as part of the pre-operational check for signs of soot or exhaust leaks on the blanket wrap and at the seams, and for an exposed section of the exhaust pipe.
- The Firewrap type blanket system installed on the entire exhaust must be inspected completely during each 100-hour maintenance interval, or more often, if necessary, to ensure it is in good working condition. Deficiencies must be corrected before being put back in service. A record of the repairs must be kept in the 100-hour maintenance records.
- Any systems that were previously approved with a black polyimide coated exhaust system and are retrofit with a new component or complete Firewrap type blanket system shall be reported to the DEP Approvals Section. This shall include the manufacturer's part numbers for the new Firewrap type blanket components.

Recommendation

The TAC's recommendation is based upon the discussion among the TAC, DEP, stakeholders, and the information gathered at Royal Hydraulics.

The TAC recommends that a new design Firewrap type blanket system can be used on new components or on the entire exhaust system as an acceptable alternative to the black polyimide coating with the following stipulations:

- The Firewrap type blanket system must be able to maintain the surface temperature below 302° F as required under Section 403.
- The Firewrap type blankets must be specifically designed and fitted for the model exhaust system or components.
- The Firewrap type blankets must have a part number specific to that model exhaust system and components.
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The TAC feels that this improved Firewrap type blanket system technology and the additional stipulations comply with Section 403 and provides at least the same level of protection to the miners as provided by the Pennsylvania Bituminous Coal Mine Act.

Currently approved exhaust system controls are not affected by this TAC recommendation.

Section 424 of the Bituminous Coal Mine Act establishes the TAC whose duties include advising the Secretary regarding implementation of this article.

The Secretary approves the TAC's recommendation for use of the Firewrap blanket type technology. The use of this system will not reduce or compromise the level of health or safety protection afforded by this Act if the recommendations issued by the TAC are closely adhered to.

If you have any questions on this approval, please contact me at cocarson@pa.gov.

Sincerely,



Colvin C. Carson
Director

cc: Pennsylvania Coal Alliance
United Mine Workers of America
Ron Bowersox, TAC
Paul Borchick, TAC

April 19, 2016

bcc: Bituminous Inspection Staff
Art Brower
TAC File
BMS Web

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**Pennsylvania Technical Advisory Committee
On Diesel Powered Equipment**

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April 11, 2016

Colvin Carson, Director
Bureau of Mine Safety
Department of Environmental Protection
131 Broadview Road, New Stanton, PA 15672

RE: TAC recommendation for Using a Firewrap Type Blanket Wrap to Control Surface Temperature on the exhaust system on Diesel Powered Equipment in PA Underground Coal Mines

Dear Mr. Carson:

Chapter 4 of the "Bituminous Coal Mine Safety Act" (the Act) provides for the use of diesel-powered equipment in underground bituminous coal mines. Section 424 of the act created a Technical Advisory Committee ("TAC") for the purpose of advising the Department regarding implementation of Chapter 4 and evaluation of alternative technology or methods for meeting the requirements of Chapter 4.

Background

During the PA TAC meeting on July 8, 2015, Ron Vlassich from Rosebud Mining brought up the issue of utilizing a blanket wrap product as an option in lieu of the widely accepted black polyimide coating on diesel exhaust systems to control surface temperature below 302° F. Another discussion took place during the January 13, 2016 TAC meeting. Royal Hydraulics provided samples of newly designed Firewrap type blankets for demonstrations.

In the past the TAC and DEP have only accepted the Firewrap type blankets on certain exhaust components. The TAC and DEP acceptance was limited to exhaust components where access is required for maintenance or where it is impractical to polyimide coat the components such as the exhaust bellows, band clamps, inspection ports, etc.

Recently there have been improvements in the design and manufacture of the Firewrap type blankets. The manufacturers can now provide component specific blankets with a much improved, tighter custom fit and improved OEM attachment devices to keep the blankets in place on the exhaust system. Basically these new Firewrap type blankets can be designed specifically for individual components or for the entire exhaust system.

The question brought up was would the TAC and DEP accept these improved design Firewrap type exhaust blankets to be used as surface temperature controls on components or even on the entire exhaust system as required by Section 403?

Investigation

On January 20, 2016 the TAC traveled to Royal Hydraulics in Cokeburg, PA to look at a piece of diesel equipment that had a specifically designed Firewrap type blanket installed. They also provided a cut away section of a blanket, samples of used black polyimide wrap and polyimide coated components.

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Recommendation

Our recommendation is based upon the discussions among the TAC, DEP and Stakeholders and the information gathered at Royal Hydraulics.

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Paul Borchick


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