Sensata Technologies

EXPLOSION PROOF ENCODERS USED IN DRAWWORKS APPLICATIONS

Background

The weight of the drill string on a drilling rig is carried by a traveling block and tackle arrangement. This block and tackle is operated by a winch known as a DrawWorks – a very critical piece of equipment. Drill pipe is carried by the Top Drive which rotates and descends into the hole as the drill bit grinds away the rock. Measuring the amount that the traveling block has traveled indicates how much length of pipe is down the hole. This informs the drill rig operator if their drilling program is on track and allows them to correlate the expected with the actual rock formations that they are encountering.

Solution

Knowing the location of the drill tip is vital to proper operation of the rig; it helps in planning for strata changes; pressure changes and adjustments to drilling mud (which lubricates the drilling operation). In addition, it helps in planning when to change out drill bits, when to take certain measurements, how much wind-up to expect, how to weight the drill string and so on. It is not uncommon to have rotary encoders stacked up on the rotational axis of the DrawWork, both for redundancy and for sharing signals with other operations on the rig. The ideal encoder would be explosion proof (required by the proximity to explosive gases), stackable (for redundancy and communication) and be able to communicate over long distances reliably. The MAAX encoder is all of these things. Engineered with this specific application in mind it is a complete solution to the issues of operating a DrawWorks on a drilling rig.

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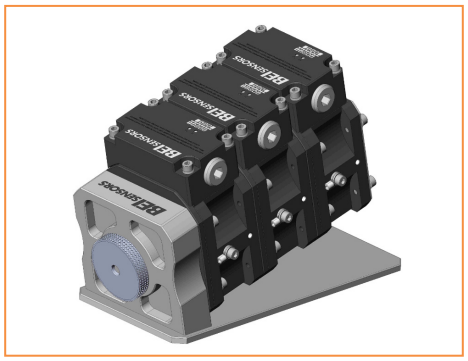
DrawWorks encoder standard pioneered by BEI and used throughout the industry

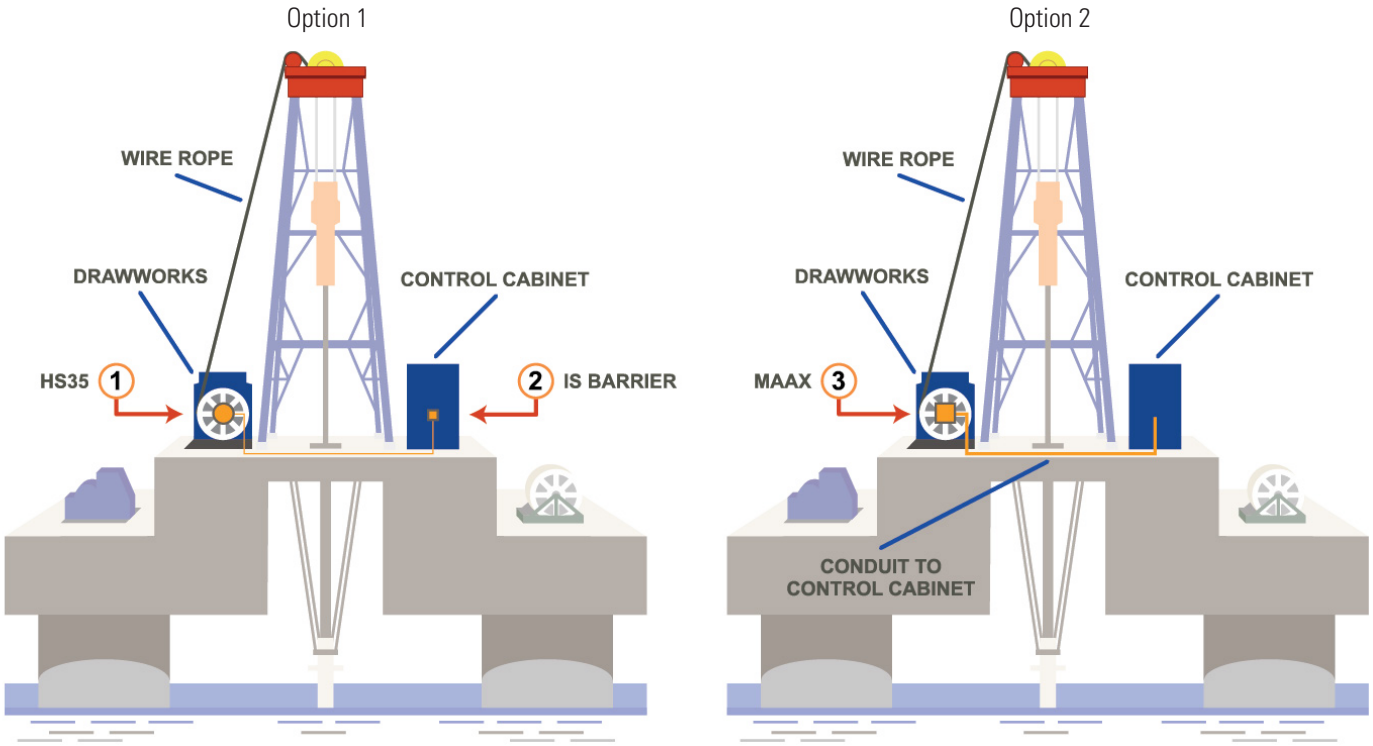


MAAX DrawWorks encoder shown as a 3-stack of encoders that bolt together and provide redundancy as well as three separate communication ports

RELATED PRODUCTS

Reference on Diagram	Product	Type	Features	Part Number	Function	Brand
1	 HS35	Intrinsically Safe	• Rated for class 1 Div 1 • Compact Size • Ruggedized against shock and vibration	HP35—1-14	Position Measurement	BEI Sensors
2	 IS Barrier	Electronic I/O Module	• Safety Protection for Encoder	60004-XXX	Electrical Control	BEI Sensors
3	 MAAX	Explosion Proof	• Class 1 Div 1	MAAX	Position Measurement	BEI Sensors

GENERAL DIAGRAM



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