



CHALLENGE

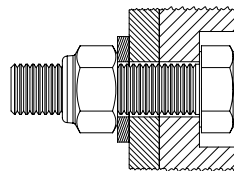
Skirt liners dropping onto conveyor belts cause significant downtime and lost production. Dropping is caused by self-loosening in the liner fasteners. This occurs when the tension (stretch) in the bolt is insufficient to prevent slip within the joint from high vibration/impacts. The uncontrolled torque from impact wrenches (rattle guns) cannot consistently develop the required bolt tension. The current industry mitigation method is the use of a nyloc nut on each liner bolt. Although this prevents the nut from falling off the bolt, it does not maintain the tension in the bolt. As such, if the nut is not sufficiently tightened, rotational loosening will occur until the bolt relaxes and the liner is no longer clamped to the skirt panel.

SOLUTION

When engaged by H&B Mining for this application, the Engentus team saw an opportunity to demonstrate the TopTorque bolting system: taking advantage of its accurate tightening without any risk of finger/hand crush, hand/arm vibration syndrome, or noise induced hearing loss. This involved using TopTorque bolt assemblies for the liners and using the TopTorque enabled Norbar Battery Torque Tool for tightening. Both Segnut lateral release nuts and conventional hex nuts where demonstrated. A HDS washer was included in each joint to ensure that tension would remain after embedding occurs between the clamped surfaces in the joint. H&B Mining implemented this solution with their Easy Maintenance Skirt (E.M.S) system on a Pilbara site in July 2021. The tightening of each joint was logged by the TopTorque Powertool, capturing the user, date, time, torque and producing a pass/fail report afterwards via bluetooth. Feedback from the install was positive, noting the ease of use and quiet operation. Further deployments are commencing on other sites, using both Segnuts and hex nuts to suit the specific needs of particular joints.

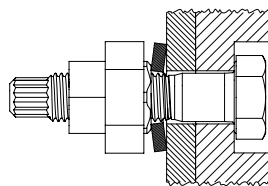
PREVIOUS

NUT	NYLOC NUT
WASHER	FLAT
BOLT	HEX HEAD M20 X 75 - 8.8 - BLK
TOOL METHOD	3/4" IMPACT WRENCH UNCONTROLLED



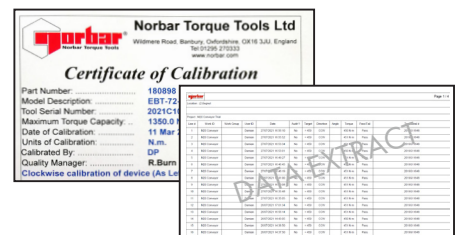
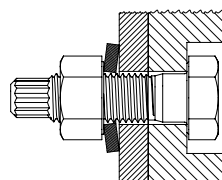
TRIALED: JOINT 1

NUT	M20 SEG NUT - CLASS 8
WASHER	20 MM HDS WASHER (DIN6796)
BOLT	HEX HEAD TOPTORQUE M20 X 75 - 8.8 - BLK
TOOL	TOPTORQUE ENABLED NORBAR EBT-72-1350
METHOD	CONTROLLED - 450 NM



TRIALED: JOINT 2

NUT	M20 HEX - CLASS 8 - STYLE 1
WASHER	20 MM HDS WASHER (DIN6796)
BOLT	HEX HEAD TOPTORQUE M20 X 55 - 8.8 - BLK
TOOL	TOPTORQUE ENABLED NORBAR EBT-72-1350
METHOD	CONTROLLED - 440 NM



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