

MNME Custom Measurement Solutions

Did you know?

Along with selling sensing, testing, and measurement equipment, MNME designs and builds custom systems and solutions. Contact us today to discuss how we can solve your measurement challenge.

Customer Case Study: Coal Seam Force Measurement

Application Summary

A coal mining customer needed to prove to OHSA inspectors that it was safe for workers to operate in locations with varying coal seam conditions. A portable low-cost tool was needed to prove crack sizes of 3 inches or less could hold at least 500lbf of separating force before locally crumbling. The tool needed to be robust, operate in an explosive environment, be easy to use by workers of various skill levels, and include an accredited calibration.



Solution

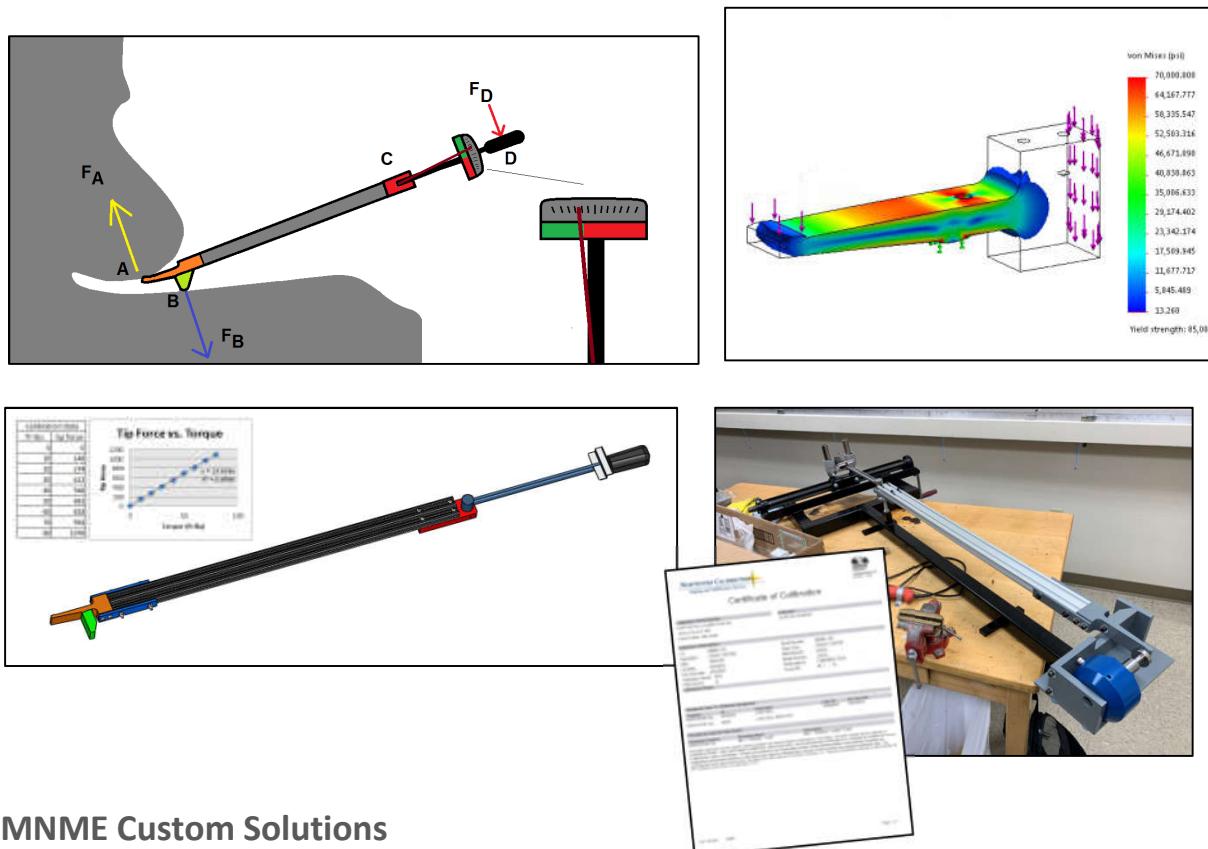


MNME developed a custom pry bar and beam torque wrench to determine the prying forces at the measuring tip. The torque wrench is calibrated to correlate ft-lbs torque to actual tip forces. A printed "Go/No-Go" color indicating strip tells the worker if "safe" crack forces greater than 500lbs exist or not. Field exchangeable height spacers allow varying crack openings to be measured. $\pm 3\%$ accuracy for a 0-1,000lbf measurement range was achieved and delivered with a 17025 A2LA accredited calibration.

How it Works

An operator inserts the tip of the tool into a crack, and manually pulls downwards on the torque wrench handle. As the beam torque wrench is loaded, the beam deflects, displaying the magnitude of torque being created. This torque value is correlated to the true pry bar tip forces as verified by an A2LA accredited calibration laboratory. The green color zone indicates forces exceeding the 500lbf "safe operating" condition. The tool can handle forces up to 2,500lbf.

Design Process: Concept > Design & Analysis > Fabrication > Calibration/Verification



MNME Custom Solutions

Do you have a problem needing to be solved? Let us help you, either by using standard measurement solutions, or customized designs.

Please contact us with any questions.

Minnesota Measurement Engineering, Inc.

Custom Measurement Solutions

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