CASE STUDY #1880 | TORQUEPRO

CRANKSHAFT TESTING

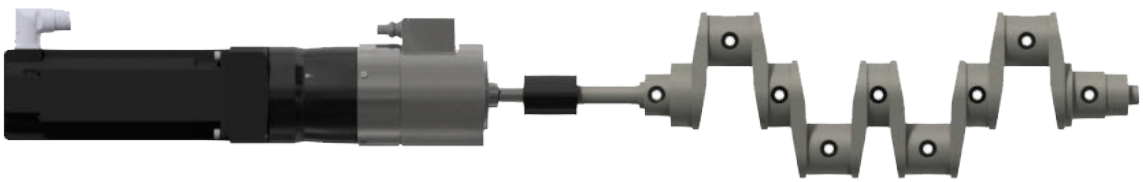
Challenge

As manufacturing moves further into the twenty-first century, more and more companies are turning to in-process testing to verify the functionality of their assemblies. Engine manufacturers are no different, and one of the components they need to test is the crankshaft. Traditionally, testing the crankshaft would involve piecing together a number of components to make a homegrown tester, which would be difficult to maintain, often large and cumbersome to operate, and inconvenient to troubleshoot when problems arise. To solve the problem, a pre-engineered solution must be used.

There are many characteristics of a crankshaft that manufacturers need to test during engine assembly, including breakaway torque, running torque, and torque at specific angles of rotation. Each of the measurements can also be taken with or without pistons installed. The biggest challenge with this type of testing is the headaches that come with the “science project” solution. The tester is either too big, too hard to use and maintain, or doesn’t have the necessary sensor and software capability to accurately measure and record test data. Switching between part models can also pose a problem, because the system needs the ability to quickly and easily change the motion profile, data collected, and tolerances. With some development time and a lot of work, a system could be designed, tested, and implemented that might be capable of testing the crankshaft, but what happens when there are problems or new part models to be added? Even worse, what if the engineer who designed the system is out, or has left the company? What’s really needed is a pre-engineered system with a fully developed software package, and twenty-four hour support for when questions or problems come up.

Solution

Using the Promess TorquePRO with a Promess motion controller, these applications can be handled easily with a standard system and software package. The TorquePRO can be easily programmed for any combination of rotational positions or torques, with user-defined speeds and accelerations, all while monitoring several conditions, such as torque (breakaway, running, and any other desired values), angular position, and time. When any process parameter is exceeded, the TorquePRO can be programmed to flag the part, abort the test, or retest. During the test, process data can be recorded, including any desired torque and angle values like peak torque, running torque, or torque at specific rotational positions, as well as a torque vs angle curve.



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All the data can be stored in a database, along with other relevant cycle information like date and time, serial number, and tolerances from the cycle. This allows a full record of every part to be maintained for traceability. Additionally, Promess offers twenty-four hour support through the life of the system, so there will always be help if a new part needs to be added, or if a test isn't giving the results it should.

Results:

The Promess TorquePRO is a simple and elegant solution for crankshaft testing applications. The TorquePRO is a standard product that's been proven over many years in the field. It's capable and flexible enough to handle multiple part models of different sizes easily. The Promess motion controller allows all the relevant cycle information to be collected and stored in a database, so there's a full record of every part produced.