

# Dynamometer Control System

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## The Challenge

Precisely controlling an electric vehicle dynamometer for the automotive EMC lab of a major luxury automaker.

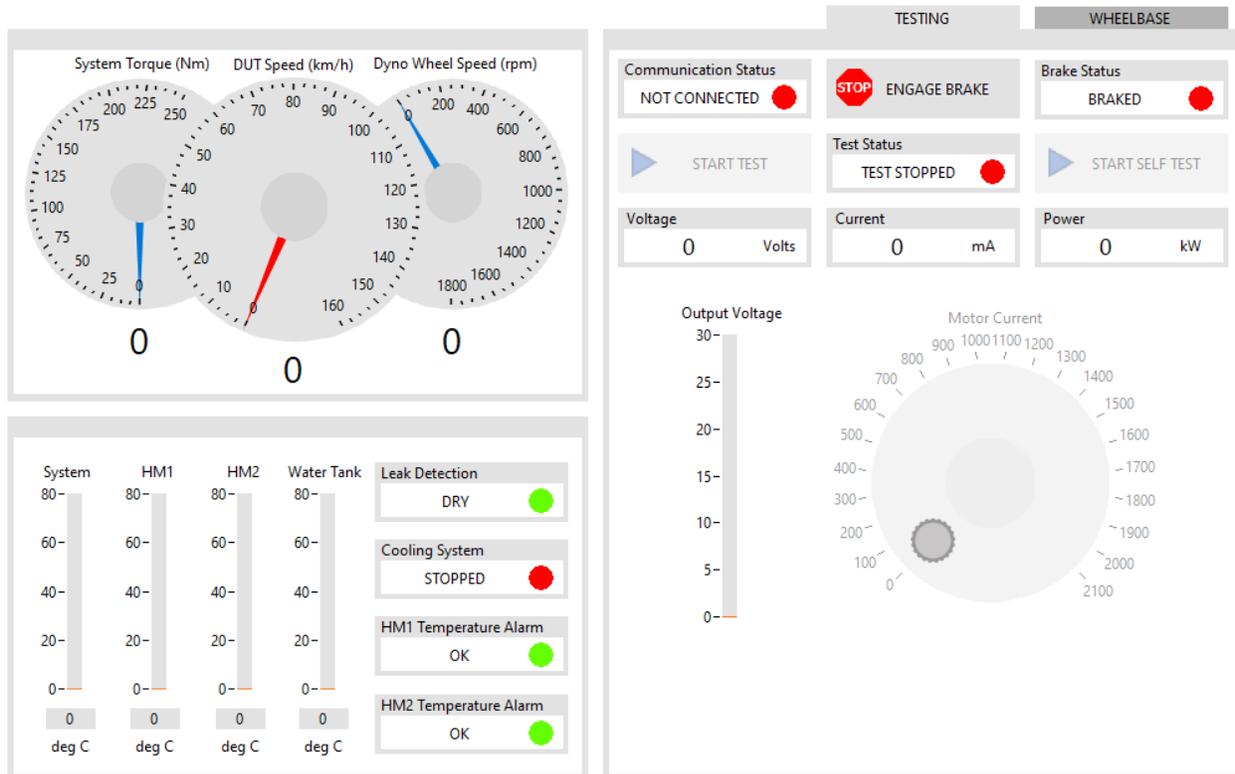


Figure 1. Dynamometer Control System User Interface

## The Solution

Proximal Technologies' engineers created a custom software package using LabVIEW to control all of the features of the dynamometer system over CAN.

## Problem Background and Solution

All new vehicles must be tested for electromagnetic compatibility. The customer, a major European luxury automaker, is developing new models of its line of fully electric cars and SUVs. These vehicles are tested inside of a large anechoic chamber to ensure that they meet EMC requirements. In order to test the vehicle during operation, a dynamometer is used, which allows the vehicle to be operated by placing rolling drums under the wheels. The dynamometer simulates real-world conditions through the use of hysteresis motors embedded below the floor.

Proximal Technologies created a custom software package in LabVIEW for controlling the dynamometer system. Through the CAN protocol, the software communicates with the dynamometer controller to constantly update the display information, including relevant temperatures and speeds of various components of the system. Additionally, the user can set or release the brake, control the hysteresis motor current, and adjust the wheelbase of the dynamometer to accommodate different vehicles.

Safety is paramount, and therefore the custom software implemented by our engineers includes extensive safety interlocks to prevent accidental damage to the dynamometer system or the vehicle. When testing an EV in the chamber, the user first releases the brake mechanism. Once released, the user can then begin the test and the current dial is enabled. By setting the current to the desired value, the user can then perform the necessary EMC measurements while the vehicle is in operation.

## Next Steps

Do you need a similar solution? If you have need for custom hardware and software integration, we at Proximal Technologies are ready to help!

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