

**Signal.X**  
TECHNOLOGIES LLC



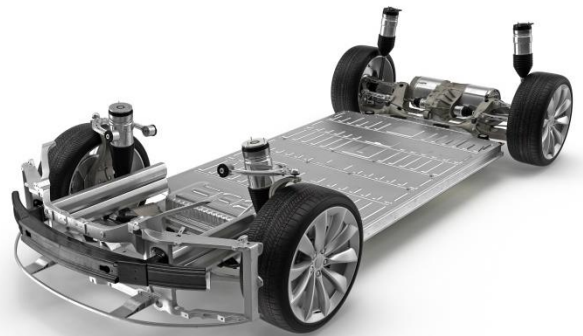
## Project Spotlight: Electric Brake Motor Dynamometer

### Partnership:

Working with Motor Diagnostic Systems, Inc., Signal.X provided controls, data acquisition, signal processing, and commissioning support to MDS as they worked to deliver their new electric brake motor dynamometer to a major OEM.

### Objectives:

Test motor performance by varying external parameters such as ambient temperature, driveline torque, and speed.



Electric assisted braking is an emerging technology pushing new brake testing methods.

### Solution Benefits:

- Multiple test motor control options
  - PWM control signal to OEM controller
  - Raw BLDC from supplied controller
- Flexible sequencing definition
- High-speed data acquisition utilizing National Instruments CompactDAQ platform
- Real-time calculation of mechanical power, DC power, and motor efficiency
- Easy-to-use, intuitive user interface



MDS developed this small motor test dynamometer including environmental simulation with support from Signal.X.

To learn more about this and other Signal.X projects, please visit [signalxtech.com/about/portfolio/](http://signalxtech.com/about/portfolio/)

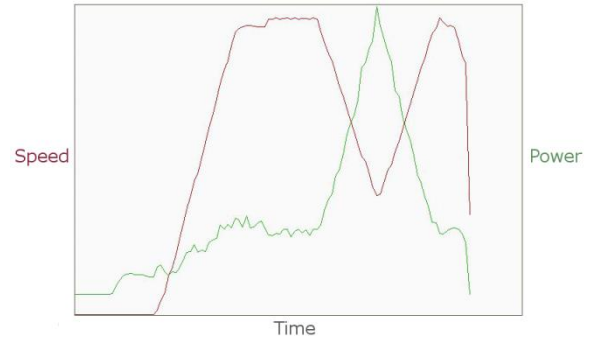
## Technology Highlights:

### Data Acquisition

Signal.X software makes it easy to view and overlay data to create detailed torque and speed curves of the device under test (DUT).

It also provides real-time calculation of:

- Mechanical power
- DC power
- Motor efficiency



This brake motor power curve shows performance indicators of the DUT.

DCPS_Volts ()	13	LM_Speed	1483
DCPS_Amps ()	3.2	BLDC_RPM ()	1543
BLDC_Amps ()	3.5	TS-RPM	1487.59
BLDC_Line_Hz	20	Status (ru00) ()	66
Control Word	5	BLDC_PWM_H	20
Current (ru15)	0.2	BLDC_RPM ()	1543

The user chooses what is prioritized by defining parameters are displayed.

### Sequence Definition

Signal.X's custom-developed software enables the user to predefine a complex sequence that controls all aspects of the test stand, and makes it easy to modify, copy, and save those sequences.

	Enable?	Type	Parameter	Value
0	✓	Set	SET_CHAMBER_TEMP_ON-OFF	20
1	✓	Wait for	EC_Temp ()	20
2	✓	Set	SET_LM_ENABLE	1
3	✓	Set	SET_LM_ROTATE_DIR	1
4	✓	Set	SET_LM_RPM	1500

Our software allows the user to customize how the part is tested.

### Why Signal.X?

This project required the application of our credentials as a National Instruments Gold Alliance Partner to provide the customer with a proven software architecture that is both reliable and scalable while meeting a tight deadline. Our technical expertise in test and measurement specific to the automotive industry allowed us to guide this customer to define requirements, develop to those requirements, and deploy a successful system.

### About Signal.X:

Since 2004, Signal.X has specialized in Test & Measurement Products for noise & vibration (NVH), production and laboratory test automation, functional test design, large data management, and custom application development.