

## SESSION

### **Pulse Width Modulation and 3-Phase Controls: Diagnosing Pulse Width Modulation for Power, Control and Sensing Circuits** *Note: This is NOT a Hybrid/EV class!*

#### DESCRIPTION

In this web class, we will discuss Pulse Width Modulation (PWM) theory and specifically how it applies to various automotive systems. The web class will flow theory to scanner and scope analysis during diagnosis of several recent case studies.

- What is Pulse Width Modulation and How Does It Work? Concepts and Theory
- Understand the differences in use and applications of PWM in power, control and Sensing circuits in BMW vehicle platforms.
- Brief explanation of PWM motor encoding for sensing and motor control applications.
- Introduction to BMW Valvetronic Motor and DME Driver Analysis, 3-phase Motors
- Introduction to 3-Phase AC/DC (Non-ground) Fuel Pumps and Controls in BMW Vehicles

#### **Who should attend?**

*Anyone seeking a deeper understanding of the concepts of PWM motor control, AC current flow and motor controls from DC drivers. Also, those who seek to understand their scanner and scope data in these systems beyond just viewing the analog signals.*

*AC current is in play in multiple modern automotive sub-systems and of course is the main motivator behind hybrid and EV platforms. See how AC is managed in a DC digital world and how it affects your diagnostics.*

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**Educator: Gary Smith**