



## **Free VFD Training**

Friday, May 4, 2018 at 8:00 am

**UF Health**  
1281 Newell Drive  
Gainesville, FL 32610

UF Health has secured the following course for their technicians. They have about 12 seats available for other FHEA hospitals that may like their staff to attend this training FREE of charge. UF Health paid for the training but wants others to benefit from the additional room. They are providing lunch and the class should be over around 2PM. This class is for technicians that are responsible for VFD troubleshooting. The syllabus is below.

### **CLASS OBJECTIVE:**

The goal of this class, is to reduce your dependence on outside service contractors; by having your own in house drive technicians.

### **COURSE SUMMARY:**

Classroom instruction to improve drive and motor system reliability, and extend the life of your systems with proper testing, inspecting and maintenance.

**FOR:** HVAC techs & Electrical / Electronic Techs.

### **TRAINING COURSE SYLLABUS:**

Learn proper maintenance techniques to insure that your equipment is as efficient and safe as possible. Discover the best practices for inspecting, testing and troubleshooting the equipment in your facility. Approximately 30% of all drives are running in by-pass, which will result in higher energy costs. This course will unlock the secrets of VFD troubleshooting, so you can get your drives back online in as short a time as possible.

### **COURSE OUTLINE:**

#### **1) "M" Theory of Electron Flow**

- Atoms and electrons - structure
- Magnetic field - direction
- Electron reaction to field - movement
- Grounding for short circuit - protection

#### **2) What Drives Do**

- Change frequency - effects motor speed
- Cost savings - reduced power consumption
- Effect on Plant - reduced spikes
- Extends life of motor - reduces heat

### **3) Drive Types**

- CSI - Current Source Inversion
- VSI - Voltage Source Inversion
- PMW - Pulse Width Modulation
- IEGT - Injection Enhanced Gate Transistors

### **4) Drive Sections Function**

- Input section
- Converter section
- Inverter section
- Output section

### **5) Drive Components Function**

- Input components
- Converter components
- Inverter components
- Output components

### **6) Pulse Width Modulation**

- How is it created
- How does it work
- What are its benefits

### **7) Testing IGBT'S**

- DC Ripple Test
- IGBT Diode Test
- IGBT Transistor Test
- IGBT Isolation Test
- IGBT Junction Test

### **8) Drive Manual**

- Diagnosing trouble codes
- Changing parameters
- Removing components
- Component values

### **9) Drive Safety**

- DC voltage
- Capacitors
- Grounds
- PPE

### **10) Inspection Manual**

- What to inspect
- How to inspect it
- How to interpret the results

### **11) Troubleshooting**

- What to do first
- Common drive problems
- Best practice
- Tips

### **12) Q & A Period**

- Drive operation
- Testing procedures
- Troubleshooting

**About Kevin McCabe**

Kevin McCabe is the chief inspector and partner at McCabe & Associates LLC, an inspection, and consulting firm that helps facility managers with their electrical systems and equipment.

Please RSVP to Bobby Baird at [bairdr@shands.ufl.edu](mailto:bairdr@shands.ufl.edu). Include **VFD Training** in the subject line.

A reply will be sent confirming your requested spot or denying the request if the class has been filled. This is a first come first serve opportunity.