AC INVERTER DRIVES

COURSE 580: 2 DAYS

Manufacturers of inverter drives report that of the units returned to them as faulty, up to 80% do not reveal any defects. Such returns are more a result of incorrect programming and/or fault diagnosis by maintenance personnel. This comprehensive course is designed to counter such difficulties by enabling the maintenance engineer to correctly set up, maintain and carry out effective fault-finding on inverter drive systems. Unlike some product-specific courses, this course is substantially generic - effectively covering most of the variable speed drive systems found in industry today and providing a thorough understanding of drive operation within the context of industrial systems.



PARTICIPANTS

Suitable for anyone who is required to maintain or configure inverter drives (electricians, instrument technicians, etc). Whilst a knowledge of basic electrical principles is desirable, no prior knowledge of motor theory or electronics is necessary.

COURSE PRESENTATION

The practicalities of configuring, fault-finding and maintenance are demonstrated and then practiced by participants on purpose-built training rigs allowing considerable experience to be gained on a representative range of proprietary drive systems. The course is supported by comprehensive course notes. Candidates gain experience of using Danfoss, Siemens, Mitsubishi, Omron and Allen Bradley drive systems.

COURSE OBJECTIVES

On completion of the course, participants will be able to

- apply safe working practices when working with variable speed drives
- demonstrate an understanding of the principles of operation of a range of inverter drive systems
- correctly configure, operate and monitor drive systems
- identify and correct configuration errors
- differentiate between drive faults, motor faults and power faults
- differentiate between control / power circuit drive faults
- appreciate the concepts of fieldbus communications and SCADA systems.

Successful completion of the course leads to the award of Amicus / Technical Training Solutions competence certificate 580: AC Inverter Drives.

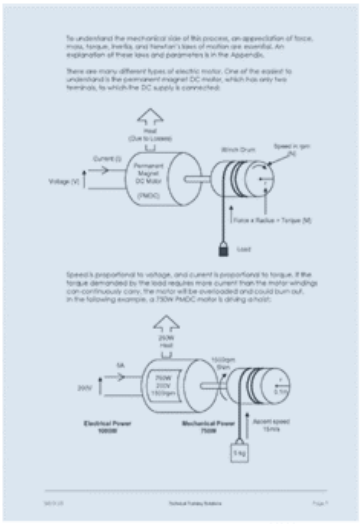


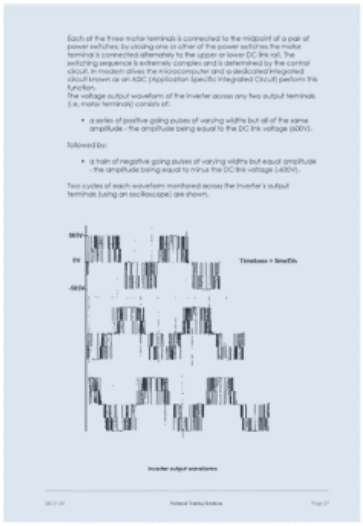
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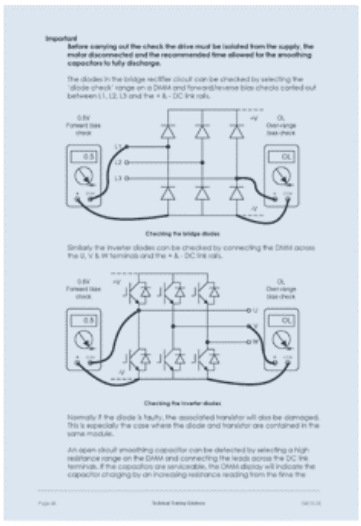
What do candidates on the ac inverter drives course actually do?

The ac inverter drives course provides an extensive understanding of the relationships between speed:torque and voltage:frequency of industrial motors.

The course notes are quite extensive and explain how ac drives create the PWM output signal as a method of simulating a variable-voltage variable-frequency sinewave, without getting involved in the underlying theory. For example, we would look in detail at what signals are produced at the output of a drive, but only very briefly at how the remainder of the electronics work. Some sample pages from the course notes give an indication of this approach:

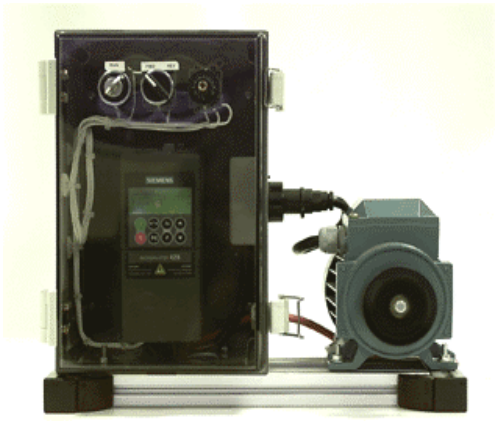




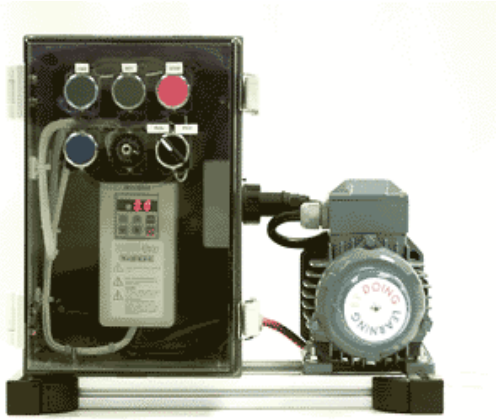


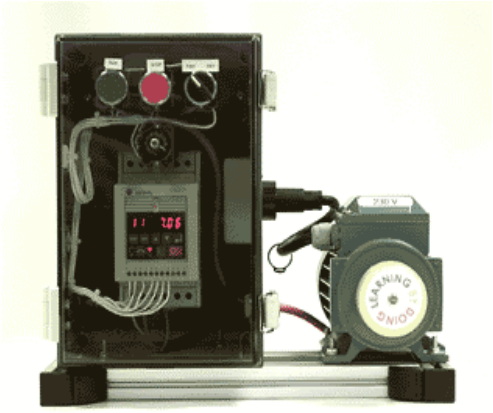
Candidates on the ac drives course then have the opportunity to configure an industrial drive unit connected to a real three-phase motor on one of our specially-designed training rigs. Each of the major manufacturers of drive units are represented. Candidates can explore how changing the parameters of the drives alters their behaviour at start-up, while running at various speeds, and at switch-off. All of this can be done in perfect safety - an opportunity they are unlikely to have with the drives they have in their workplaces.





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Candidates use various sorts of test equipment throughout the course. Standard digital multimeters are used to test the serviceability of a drive's power module (the most commonly failing part in any drive unit), tachos are used to measure the motor speed accurately, current clamp meters are used to monitor the current flow to the motor and a digital oscilloscope is used to analyse the drive's PWM output waveform.









Safety issues are, of course, paramount considerations, and the dangers of incorrect parameter settings, the dangers of electric shock whilst working 'live' and making measurements (particularly with regard to the high energy capacitors found inside inverter drives), as well as the physical dangers associated with unexpected motor movement are all covered on the course, as are the important issues of emc and installation earthing and suppression components.

If you would like to see some of the equipment used on the ac inverter drives course for yourself, then please call us to arrange a visit to our base in Kent. Alternatively, our customer liason staff can visit you with demonstration parts anywhere in the British Isles.

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