

Item No.: CO4204-7S

## Course - Electric Machines 1: DC machines

### Includes:

- 1 Experiment card with open, 2-pole stator and 2 exciter windings, temperature sensor with voltage source, starting and load resistors
- Rotor with adjustable brushes
- Stroboscope with extra-bright LED
- CD-ROM with Labsoft browser and course software

### Course contents:

- Identifying the most common applications for DC machines
- Explanation of electromagnetic induction and the Lorentz force
- Explanation of design and function of commutated machines (DC machines)
- Introduction to the key components of commutated machines, stator, commutator and carbon brushes
- Measurement of current and voltage in armature and exciter and determining the armature and exciter impedances
- Interpreting a rating plate
- Introduction to circuit diagrams and characteristics for various types of connection: series, shunt and compound windings
- Connection and operation of DC machines in various operating modes

- Speed measurement using a stroboscope
- Introduction to various types of speed regulation and reversal: field weakening, modification by means of armature and field resistors
- Experimental investigation of various methods for controlling speed and direction of rotation
- Connection and operation of commutated machines with AC voltages: universal motors
- Introduction to methods of braking DC machines
- Measurement of current and voltage when braking DC machines
- Explain the importance of temperature monitoring for electrical machines
- Temperature measurement in the exciter winding when a machine is running using a semiconductor sensor
- Course duration. 5.5 h approx.