

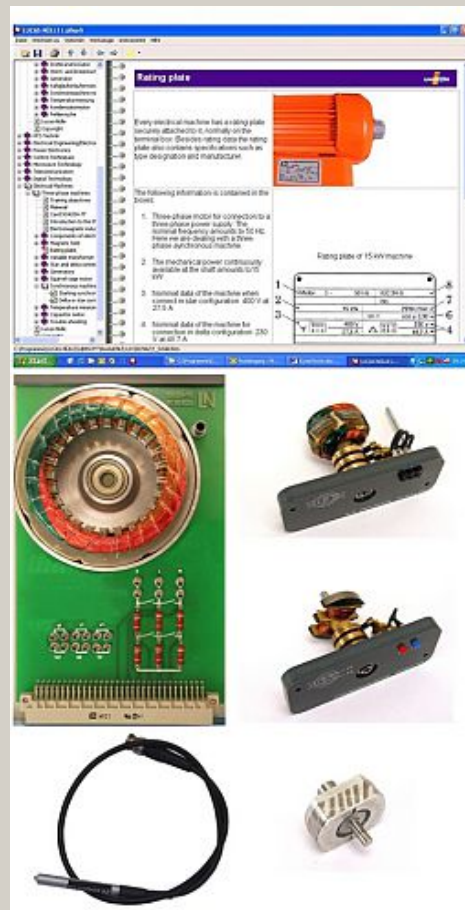
## Course - Electric Machines 3: Synchronous and slip-ring machines

### Includes:

- 1 Experiment card including stator with three-phase winding and starting resistors
- 3 Rotors: slip-ring rotor, synchronous rotor and reluctance rotor
- Stroboscope with extra-bright LED
- CD-ROM with Labsoft browser and course software

### Course contents:

- Identifying the most common applications for synchronous rotors, slip-ring rotors and reluctance machines
- Explanation of how a magnetic field arises in rotating field machines
- Explanation of the design and function of synchronous, slip-ring and reluctance machines
- Introduction to the key components of synchronous, slip-ring and reluctance machines (including salient pole, non-salient pole and reluctance rotors)
- Introduction to circuit diagrams, terminal charts and nominal data for synchronous, slip-ring and reluctance machines
- Interpreting a rating plate
- Introduction to the principles of speed control of slip-ring rotor machines
- Experimental investigation of the operating response of slip-ring rotor machines. Measurement of rotor voltages with open and shorted rotor windings, response to starting resistors, determining slip and speed by means of voltage measurements
- Explanation of the differences between motor and generator operation of synchronous machines
- Introduction to the principles of speed control of synchronous machines
- Experimental investigation of the operating response of synchronous machines: run-up behaviour, speed measurement, power factor determination ( $\cos \phi$ ) with the aid of current and voltage measurements
- Experimental investigation of the operating response of reluctance machines: creation of torque, run-up response, asynchronous and synchronous operation, reversal of rotation, power factor determination ( $\cos \phi$ ) with the aid of



current and voltage measurements

- Course duration 5 h approx.