Advanced Electric Drives - Video course

COURSE OUTLINE

The first course on electric drives usually introduces the concept of control of electric motors for various types of mechanical loads. In the first course, mainly the dc motor control (both steady state and dynamic), and steady state torque and speed control of ac motors are emphasized.

The present course "Advanced electric drives" focuses on the dynamic control of dc and ac motor from solid state converters for better torque and speed response. Initially, the dynamic models of the dc and ac motors are developed that will be useful in understanding the dynamic control.

Advanced control techniques are applied to optimize the performance of ac motor drives. Since majority of modern drives are ac motor drives, the course centers around the control of ac motor drives. Finally, control aspects of some special motors, such as permanent magnet synchronous motor, brushless dc motor, switched reluctance motor, etc. are presented.

Contents:


Self controlled synchronous motor, unity power factor operation, vector control of synchronous motor, cycloconverter-fed synchronous motor drive.

Permanent magnet synchronous motor drive, brushless dc motor drive, switched reluctance motor drive, stepper motors.

COURSE DETAIL

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<tr>
<th>Sl. No</th>
<th>Topic</th>
<th>No. of Hours</th>
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<tr>
<td>1</td>
<td>Generalized theory and Kron’s primitive machine model</td>
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<td>2</td>
<td>Modeling of dc machines</td>
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<td>Modeling of induction machine</td>
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<td>Modeling of synchronous machine</td>
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<td>Reference frame theory and per unit system</td>
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<td>3</td>
<td>Control of Induction Motor Drive</td>
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<td>Scalar control of induction motor</td>
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<td>Principle of vector control and field orientation</td>
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<td>Sensorless control and flux observers</td>
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<td>Direct torque and flux control of induction motor</td>
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<td>Mutilevel converter-fed induction motor drive</td>
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<td>Utility friendly induction motor drive</td>
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Cycloconverter-fed synchronous motor drive
   Control of synchronous reluctance motor

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<td>Permanent magnet synchronous motor</td>
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<td>Stepper motors and control</td>
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**References:**

**Reference Books:**


