

Individual course "Electrical Drives", Schedule

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Date	Time	Content
1. Day	08.30-10.00	Basics of the electrical engineering <ul style="list-style-type: none"> • Electric and magnetic fields • Basic principles of the electrical engineering • Origin of forces on current-carrying conductors Electrical drives <ul style="list-style-type: none"> • Design of electrical drives (motor, sensor, power stack, control) • Classification of electrical drives • Comparison of the advantages and disadvantages
1. Day	10.30-12.00	Direct current drives <ul style="list-style-type: none"> • The direct current motor • Control devices for constant speed drives with direct current motor • Control devices for variable speed drives with direct current motor
1. Day	13.00-14.30	Two-phase and three-phase alternating current drives <ul style="list-style-type: none"> • Servo drives <ul style="list-style-type: none"> ○ The brushless direct current motor ○ The synchronous motor ○ The linear motor and the torque motor
1. Day	15.00-16.30	<ul style="list-style-type: none"> • Control devices for Servo drives (construction and functionality) • Stepper motor drives • Drives with asynchronous motor
2. Day	08.30-10.00	Control of electrical drives <ul style="list-style-type: none"> • Design of control loops • Open loop control <ul style="list-style-type: none"> ○ for direct current motors ○ for asynchronous motors
2. Day	10.30-12.00	<ul style="list-style-type: none"> • Closed loop control <ul style="list-style-type: none"> ○ Current control <ul style="list-style-type: none"> • for direct current motors • for brushless direct current motors • Vector control for asynchronous and synchronous motors ○ Speed control ○ Position control ○ Optimization
2. Day	13.00-14.30	Motor encoders <ul style="list-style-type: none"> • Classification • The resolver • The optical encoder • The magnetic encoder
2. Day	15.00-16.30	Technological functions and integration in automation system <ul style="list-style-type: none"> • Technology controller • Motion control <ul style="list-style-type: none"> ○ Position controller ○ Synchronization controller (electronic shaft, electronic gear, electronic cam disc) • Safety functions <ul style="list-style-type: none"> ○ Intension ○ Integrated safety functions • Field busses/serial interfaces <ul style="list-style-type: none"> ○ Functionality ○ Isochronous mode ○ Internet of Things