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COURSE BROCHURE

Electrical Energy Efficiency and Low-Carbon Loads Training Course

12 – 16 July 2027
Madrid

Electrical Energy Efficiency and Low-Carbon Loads Training Course

Ref: 3081_117068 **Date:** 12 – 16 July 2027 **Location:** Madrid **Fees:** 6200 GBP

Electrical Energy Efficiency and Low-Carbon Loads is a 1-week training course for electrical engineers, plant energy leads and facilities engineers who build a Ranked Site Savings Register of efficiency and electrification measures with payback and carbon figures. Rising tariffs, carbon targets and ageing motor fleets push sites to cut kilowatt-hours and electrify heat loads. Jupiter Prime Training delivers this course on electrical energy efficiency and low-carbon loads.

Why Electrical Energy Efficiency and Low-Carbon Loads Matter Now

Three forces shape this subject today. Volatile tariffs and demand charges make wasted kilowatt-hours in oversized motors and air leaks costly. Boards and lenders want credible carbon plans, making fuel-fired boilers and process heaters early candidates for heat pumps and electric heating. Limited connection capacity means every new electric load must be offset by savings elsewhere on the network. A site that handles this well lowers cost and emissions together; one that handles it badly buys equipment that underperforms or overloads its own supply.

Who Gains Most from Electrical Energy Efficiency and Low-Carbon Loads

- Engineers responsible for motor, pump and fan systems and their speed control
- Energy leads who track site consumption, demand peaks and carbon reporting
- Facilities engineers who run lighting, cooling, heating and building services plant
- Maintenance planners who choose repair or replacement for rotating electrical equipment
- Project engineers who prepare the business case for electrification and on-site solar

A site team that sends its electrical, energy and facilities engineers together gains most because savings and new loads are judged against one supply capacity.

Electrical Energy Efficiency and Low-Carbon Loads Capabilities

Participants measure electrical losses, size remedies and rank them by money and carbon.

- Calculate motor and drive losses from nameplate, load and running hours — repair-or-replace decisions
- Specify variable speed control for pumps, fans and compressors — capital approval panels
- Assess compressed air leakage and pressure settings — production and maintenance supervisors
- Weigh heat pumps against fuel-fired boilers on running cost and emissions — site leadership
- Test new electric loads against transformer and feeder headroom — network and supply planners
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Build a ranked list of measures with payback and carbon savings — finance and sustainability leads

Key Electrical Energy Efficiency and Low-Carbon Loads Terms

- Load factor — average demand divided by peak demand, showing how evenly a site uses supply.
- Variable speed drive — power electronics that match motor speed to flow or pressure need.
- Coefficient of performance — the heat a heat pump delivers divided by the electrical energy it uses.
- Simple payback — capital cost divided by yearly saving, in years.
- Grid emission factor — carbon released per unit of electricity drawn from the public supply.
- Baseline consumption — measured or modelled energy use before a measure, used to verify savings.

Electrical Energy Efficiency and Low-Carbon Loads Day by Day

Day 1: Site Electrical Consumption and Carbon Picture

- Half-Hourly Meter Profiles — Where Peaks and Base Loads Sit
- Load Factor and Demand Charges — Which Tariff Elements Drive Cost
- Sub-Metering Plans by Feeder — Which Loads Deserve Their Own Meter
- Grid Emission Factors — Converting Kilowatt-Hours into Carbon Figures
- Baseline Consumption Models — How Savings Will Later Be Verified

Day 2: Motors, Drives and Rotating Plant

- Motor Efficiency Classes and Loss Sources — Replace or Rewind Choices
- Oversized Motor Detection from Load Readings — Right-Sizing Priorities
- Variable Speed Drives on Pumps and Fans — Part-Load Savings
- Affinity Laws for Centrifugal Loads — Estimating Speed Reduction Gains
- Belt, Gearbox and Coupling Losses — Transmission Upgrade Decisions

Day 3: Compressed Air, Lighting and Cooling Loads

- Compressed Air Leak Surveys — Repair Lists and Pressure Set Points
- Compressor Sequencing and Storage — Unloaded Running Hours Cut
- Lighting Retrofit with Presence and Daylight Control — Building Savings
- Chiller Plant Efficiency and Set Points — Cooling Energy per Tonne
- Power Factor and Harmonic Losses — Correction Equipment Choices

Day 4: Moving Heat and Process Loads to Electric Supply

- Heat Pump Coefficient of Performance — Replacing Boilers and Heaters
- Electric Process Heating Options — Furnaces, Ovens and Steam Raising
- On-Site Solar Sizing Against Daytime Load — Self-Consumption Share
- Transformer and Feeder Headroom Checks — Connection Capacity for New Loads
- Load Shifting and Thermal Storage — Peak Demand Avoided by Electrification

Day 5: Practising the Ranked Site Savings Register

- Baseline and Meter Data Applied to a Case Site — Savings Sizing
- Motor, Drive and Compressed Air Measures Costed — Capital and Saving
- Electrification Measures Checked Against Supply Headroom — Feasible Sequence
- Simple Payback and Carbon per Measure — Ranking Rules for Approval
- Ranked Site Savings Register — Final Measure List for Sign-Off

Applying Electrical Energy Efficiency and Low-Carbon Loads After the Course

- Survey loads on the ten largest motors and flag right-sizing or variable speed candidates.
- Run a compressed air leak survey, tag leaks and report kilowatt-hours recovered.

Electrical Energy Efficiency and Low-Carbon Loads Questions FAQ

What is electrical energy efficiency and low-carbon loads work, and why does it matter now?

It is the practice of cutting electrical losses and moving heat and process loads onto cleaner electric supply. It matters now because tariffs, carbon targets and connection limits reward sites that use fewer kilowatt-hours.

Which roles gain most from electrical energy efficiency and low-carbon loads training?

Electrical, energy and facilities engineers gain most. Maintenance planners and project engineers also benefit, as they decide motor replacement, drive fitting and the heat pump or solar case.

How does electrical energy efficiency and low-carbon loads training differ from an energy management system course?

It works at equipment level rather than policy level. A management system course covers targets and audit cycles; this one sizes motors, drives, heat pumps and solar and checks supply headroom.

What do you bring back from electrical energy efficiency and low-carbon loads training?

You bring back a ranked list of measures for a real or case site. Each carries cost, saving, payback and carbon, ready for approval.

Electrical Energy Efficiency and Low-Carbon Loads: The Way Forward

The Ranked Site Savings Register gives engineering and finance one list of measures with cost, saving, payback and carbon. Its first use is choosing which motors, drives and compressed air repairs go into next year's budget. Site leadership and energy leads use it to sequence electrification. After the first measures run, revisit the baseline to confirm savings before the next round.