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| **Title** | Energy monitoring / planning / management skills & techniques and EE KTF |
| **Duration (in weeks)** | 2 |
| **Starting / ending week** | 21 / 22 |
| **Key Concepts and Issues** | energy performance, energy management, energy planning, energy monitoring, knowledge transfer frameworks |
| **Intended Purpose** | * Provide an overview of the skills required for manipulation, interpretation and monitoring of data pertaining to energy consumption. * Provide an overview of Knowledge Transfer Frameworks in the ambience of an EnMS |
| **Learning Outcomes** | The learners will be able to:   * assess the energy performance characteristics for a particular building/area * design energy efficiency knowledge transfer frameworks * use data to better understand and make decisions about energy use and energy conservation * monitor and measure the energy consumption and energy savings. |
| **Basic Learning Material** | **Presentation Slides**  [Skills & Techniques](https://www.dropbox.com/home/EPOQUE%20project/epoque_o5/Course%20IV/Module%203?preview=%5B4.3.010%5D+O5_EnMS_CourseIV_Module3_Topic2.pptx) provided in online format  **Documents**   * [An Advanced Energy Management Framework to Promote Energy Awareness, Vikhorev , Greenough & Brown (2012) Institute of Energy and Sustainable Development, De Montfort University, Leicester](https://www.dropbox.com/home/EPOQUE%20project/epoque_o5/Course%20IV/Module%203?preview=%5B4.3.007%5D+Vikhorev12Advanced.pdf) * [A Four-Step Path to a Comprehensive Energy Management Action Plan by Keith Stager and Cassie Quaintance, Schneider Electric North American Operating Division](https://www.dropbox.com/home/EPOQUE%20project/epoque_o5/Course%20IV/Module%203?preview=%5B4.3.008%5D+energy-management-guide.pdf) * [Making the Most of Your Company’s Knowledge: A Strategic Framework Georg von Krogh, Ikujiro Nonaka, Manfred Aben (2001)](https://www.dropbox.com/home/EPOQUE%20project/epoque_o5/Course%20IV/Module%203?preview=%5B4.3.009%5D+Making-the-most-of-our-companys-knowledge.Strategic-framework-2001.pdf) |
| **Additional Learning Material** | **Documents**   * [Success factors of energy management in energy-intensive industries: Development priority of energy performance measurement, International Journal of Energy Research Volume 37, Issue 8, pages 936–951, 25 June 2013](https://www.dropbox.com/home/EPOQUE%20project/epoque_o5/Course%20IV/Module%203?preview=%5B4.3.011%5D+2013+-+Success+factors+of+energy+management+in+energyintensive+industrie....pdf) * [Scenario modelling: A holistic environmental and energy management method for building operation optimization. O'Donnell, James T.; Keane, Marcus; Bazjanac, Vladimir; et al. (2013)](https://www.dropbox.com/home/EPOQUE%20project/epoque_o5/Course%20IV/Module%203?preview=%5B4.3.012%5D+Scenario-Modelling_2012_EB_ForDistribution+done.pdf) * [Automated energy monitoring of machine tools, Vijayaraghavan & Dornfeld Laboratory for Manufacturing and Sustainability, UC Berkeley (2010)](https://www.dropbox.com/home/EPOQUE%20project/epoque_o5/Course%20IV/Module%203?preview=%5B4.3.013%5D+eScholarship+UC+item+3j5411bd.pdf) * [Thinking Globally: How ISO 50001 - Energy Management can make industrial energy efficiency standard practice, McKane, Aimee (2010)](https://www.dropbox.com/home/EPOQUE%20project/epoque_o5/Course%20IV/Module%203?preview=%5B4.3.014%5D+eScholarship+UC+item+92d8q553.pdf) * [A framework for evaluating economics of knowledge management systems, Minsoo Shin (2004)](https://www.dropbox.com/home/EPOQUE%20project/epoque_o5/Course%20IV/Module%203?preview=%5B4.3.015%5D+19)17.pdf) * [Working Knowledge: How Organizations Manage What They Know, Thomas H. Davenport and Lawrence Prusak](https://www.dropbox.com/home/EPOQUE%20project/epoque_o5/Course%20IV/Module%203?preview=%5B4.3.016%5D+T1-Chapter1.pdf) |
| **Educational video** | * [Energy Management Foundation Training - Module 14](https://www.youtube.com/watch?v=UiDzZout2Lk) * [Guideline for EnMS Charter](https://www.youtube.com/watch?v=xGpLyt2yXDg) * [Energy Management Foundation Training - Module 20](https://www.youtube.com/watch?v=MwsbSJ7Qfm4) |
| **Reading materials** |  |
| **Activities** | Assignment were the learners are asked to write a proposal for EnMS implementation addressed to top management within an organisation. They are to describe all the benefits and opportunities presented to the organization via EnMS implementation. |
| **Checklist** | At the end of this learning module, the learners will be able to:   * Draw up and maintain an energy measurement plan * Draw up and maintain an energy management plan * Draw up and manage an internal audit plan * Write an energy policy and all other ISO 50001 required documents * Design an Energy Efficiency Knowledge Transfer Framework |
| **Evaluation** | Evaluation is done through grading of the assignments. |