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**Windows as Renewable Energy Sources for Europe
Window Energy Data Network**

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WinDat Training and Education. Training Course - Introduction

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1 Introduction

1.1 Modules

The training course modules cover the following items:

- 1 Basic physics on thermal and optical properties
- 2 Window components characteristics
- 3 WIS software programme
- 4 Building energy simulation

1.1.1 Basic Physics on thermal and optical properties

This module contains the following items:

- Heat transfer mechanisms (conduction, convection, radiation)
- Thermal and solar properties (U-value, g-value)
- Spectral distribution (ultraviolet, visible, solar, thermal wavelength range)
- Specular and scattering reflecting materials
- Total solar heat gain factor (direct, secondary component)
- Reference to EN standards used

1.1.2 Window Components

This module describes the different components of the windows:

- Panes and screens
- Fields of application (heating or cooling dominated climate)
- Shading devices and other scattering materials
- Frames and spacers

1.1.3 WIS Programme

This module gives an overview of the WIS programme, its main structure, the calculation basis and the data management:

- Introduction
- Calculation modules
- Data management (input/output)
- Example and remarks

1.1.4 Building energy simulation

Building energy simulation tools use window data with different level of complexity:

- Simplified calculation tools (e.g. EN832, EN 13790) use U- and g-values only
- Detailed calculation tools use window system data for each component, layer by layer, for the optical data normally multiband calculations are made. An example of an input data structure of a window is given in Annex 3 for the program TRNSYS.

The hands out for the course are:

- CD with WIS software setup programme and documentation in pdf format
- Print out of all power point presentations
- WIS User Guide “Examples of windows as input for WIS” (**WinDat_N4.02**)

The **powerpoint presentations** are stored as separate **confidential** appendices to this document.

The confidentiality is intended to stimulate attendance at the training course sessions.

2 The contents of the training course modules

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