



## SOLtrain – West Africa

### Training Course for Experts & Professionals

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#### Agenda - Training Course 2

27th – 29th August, 2018



#### Background Information:

This training course is the second in a series of technical training courses for professionals in the framework of the project "SOLTRAIN West Africa", that are carried out in cooperation with the National Centre for Energy Research and Development, University of Nigeria, Nsukka.

The content of the second technical training course will be the theoretical and practical background to be able to design, build and to install and solar thermal systems.

The target groups for this training are staff of companies, who are already active in solar water heating systems, staff from Universities and Vocational training centres, as well as technical experts from utilities, governmental bodies and housing developers. The registration is limited to participants who had attended the first Train the Trainer course or Soltrain West Africa Dissemination course.

<b>Monday, 27 August.</b>	
08:30 h	Welcome
08:40 h	xxxx Introduction of participants and expectations
09:00 h	The framework, duration and the content of the project SOLTRAIN
09:30 h	Repetition and consolidation of the content of the 1st training course <ul style="list-style-type: none"> <li>• Overview on applications for solar thermal systems</li> <li>• Solar thermal system designs for hot water (thermosyphon and pumped systems), AEE INTEC</li> </ul>
10:30 h	Coffee break
11:00 h	Consolidation of the content of the 1st training course <ul style="list-style-type: none"> <li>• Solar collectors, types, quality and efficiency</li> <li>• Other components of a solar thermal system (storage, piping, expansion vessels, electronic control)</li> <li>• Orientation, inclination of collectors</li> </ul> AEE INTEC
13:00 h	Lunch
14:00 h	Thermosyphon Solar Water Heaters Low and high pressure systems, quality and system configuration, AEE INTEC
15:15 h	Coffee break
15:45 h	Pumped Solar Water Heaters <ul style="list-style-type: none"> <li>• General hydraulic schemes</li> <li>• Mode of operation (High and low flow systems)</li> <li>• Presentation and discussion of the general principles</li> </ul> AEE INTEC
17:00 h	End of 1 <sup>st</sup> day

<b>Tuesday, 28 August</b>	
08:30 h	Medium sized pumped systems (30 – 100 m <sup>2</sup> collector area) <ul style="list-style-type: none"> <li>• Design principles (systems for hotels, hospitals...)</li> <li>• Backup heating</li> </ul> AEE INTEC
10:30 h	Coffee break
11:00 h	Solar thermal system design with RETScreen Introduction of the program, AEE INTEC
13:00 h	Lunch
14:00 h	Dimensioning of thermosyphon and pumped systems with RETScreen and hand calculation in order to be able to prepare feasibility studies, heat cost calculation, AEE INTEC
15:15 h	Coffee break
15:45 h	Collector field hydraulic <ul style="list-style-type: none"> <li>• Main principles of serial and parallel connection</li> <li>• Pressure drop</li> </ul> Collector mounting systems, AEE INTEC
17:00 h	End of second day

<b>Wednesday, 29 August</b>	
08:00 h	Solar thermal system design with simulation software, AEE INTEC
10:00 h	Coffee break
10:15 h	Exam – training course 2
11:30 h	Lunch
12:00 h	Technical Tour to existing Solar water heating systems (Thermosyphon systems with installed monitoring equipment in Enugu)
17:00 h	Handover of Certificates
17:15 h	End of Workshop