MODULES

OUTLINES AND ORGANIZATION OF TRAINING

Noord - Deuningen, 23/05/2019

PLANET

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MODULE ZERO

- DAY 1 – IN CLASS

Introduction to the Planet Course

Overview of the facility and rules of behavior; Displying of Educational tools and Training rooms; Presentation of trainers and contact persons - 1 hour

Course Objectives; Pedagogical methodology; Interim reviews and final examination; Lessons schedule - 1 hour

Awarness of personal competence (Core, technical and soft skills) - 2 hours

Defition and evaluation of personal and professional goals - 2 hours

Definition and valorization of personal strenghts to improve self-efficiency and confidence - 2 hours

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MODULE ZERO

- DAY 2 – IN CLASS

Renewable energy: Environmental sustainability and market potential

General issue: Uses of natural resources; Human activity impact; Global warming - 1 hour

Benefits of RES on environmental protection:

Impact of renewable energy by biomass;

Impact of renewable energy by biogas;

Impact of renewable energy by solar - 4 hours

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MODULE ZERO

- DAY 3 – IN CLASS

Horizontal principles and General education on Safety

Gender equality: Mainstrem; Empowerment; Interculturalism; Women in employment; Networking - 4 hours

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MODULE ZERO

- DAY 4 – IN CLASS

General and Specific education on Safety and Health

General education on occupational safety and health:

National legislation; Risk definition; Damage definition; Prevention definition; Protection definition; Establishment of corporate prevention; Rights, duties and sanctions; Supervisory bodies - 4 hours

Safety and Health: Energy production in Biogas plant:

Protection equipment and clothing; Physical risks; Biological risks; Chemical risks; Mechanical risks; Handling; Warning signals; Way-out and exodus procedure; Emergences; First aid; Missed fires and injuries – 3 hours

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MODULE ZERO

- DAY 5 – IN CLASS

General and Specific education on Safety and Health

Safety and Health: Energy production in Biomass plant:

Manual activity; Rotating equipment; Machinery; Protection equipment and clothing; Physical risks; Biological risks; Chemical risks; Stress; Handling; Warning signals; Way-out and exodus procedure; Emergences; First aid; Missed fires and injuries - 3 hours

Safety and Health: Energy production in Solar plant:

Protection equipment and clothing; Physical risks; Biological risks; Chemical risks; Stress; Handling; Warning signals; Way-out and exodus procedure; Emergences; First aid; Missed fires and injuries – 3 hours

Safety and Health: Exam – 2 hours

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BIOGAS MODULE

- DAY 1 – IN CLASS

Introduction of biogas

Purpose of the module; Introductory video to biogas module; Typical places where you can find biogas (manure, waste, landfill, nature); Explanation anaerobic digestion process; Phases of digestion; Biology, chemical features of anaerobic digestion; Table of biogas composition (CH_4, CO_2, etc); Feedstock examples for biogas; Energy value, Gas production vs type of substrate; examples of amount of feedstock available (3 cows for 1 family); Applications of biogas (biomethane, electricity, heat); Advantages and disadvantages of biogas; Sustainable energy (electricity, biomethane, heat); Opportunities and potential of biogas; Methane emissions manure; Value of digestate, (nitrogen, phosphate, odour, pathogens, weeds etc.); Applications for digestate; Organic matter and digestate; Domestic biogas; Successes and failures (analysis); Current situation country – 8 hours

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BIOGAS MODULE

- DAY 2 – IN CLASS

Layout of a biogas plant

Plant; Digester; Logistics; Gas utilization;

Assignment: Draw a biogas plant for a specific situation with brief description – 8 hours

- DAY 3 – IN CLASS

Processes of a biogas plant

Digestion process: (Anaerobic) biology; Chemical; Energy;

Substrates; Engineering;

Assignments in groups: Follow up of day 2. Making a PFD, inclusive calculations; Presentation and discussion of the results – 8 hours

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BIOGAS MODULE

- DAY 4 – ON SITE/IN CLASS

Farmers digestion plant: Recognize type of digester and components; Type of substrate feeding the digester; Biogas yield - according theoretical values; Digestate distribution and processing – 5 hours on site

Summary of visit - based on a template; Presentation and discussion of the results – 3 hours in class

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BIOGAS MODULE

- DAY 5 – IN CLASS

Business model for biogas plants: Operational costs and

Assignments in groups – 8 hours

- DAY 6 – IN CLASS

Safety and Environment: Safety issues; Environment

related issues - 5 hours

Scenario assignment – 3 hours

- DAY 7 – IN CLASS

Logistics and Management: Safety, Logistics and

Management in a biogas plant – 8 hours

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BIOGAS MODULE

- DAY 8 – IN CLASS

Operation of biogas plant: Daily operation; Daily checks –
process indicators; Troubleshooting process; Optimizing Digester biology
- 6 hours

Group assignment – 2 hours

- DAY 9 – ON SITE

Maintenance: How to maintain, repair or replace: Rotation equipment,
Heaters, Static equipment, Keeping records - 8 hours

- DAY 10 – SITE VISIT

Application of all learning objects in the field and group assignment – 8 hours

- DAY 11 – IN CLASS

Recap, test and presentation: Exam; Presentation; Summary; Diploma – 8 hours

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BIOMASS MODULE

- DAY 1 – IN CLASS

Technic: Installations; Heating, hydraulics, district heating network, mains operation, transfer stations; Electrical, measuring, control and regulation technology; Boiler technology; Conveyor technology - 8 hours

- DAY 2 – IN CLASS

Operation management: Maintenance; Monitoring, quality management, benchmark, plant optimisation; Health and safety precautions; Fire prevention; Troubleshooting; Data backup; Supporting computer programs - 8 hours

- DAY 3 – IN CLASS

Raw material: Raw material sources; Wood preparation for wood chips production; Logistics; Fuel quality and quantity measurement, fuel purchasing; Wood and biomass market; Residue Management / ash utilization – 8 hours

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BIOMASS MODULE

- DAY 4 – ONLINE

Economy: Financing - business plan, subsidies, investement, insurance; Business administration: accounting, controlling, reporting; Business developement: marketing / customer acquisition, -loyality and -satisfaction - 6 hours

Law: Tax law – 2 hours

- DAY 5 – ONLINE

Law: Contract Law - financing, lease, easement, raw material supply, community, heat supply contracts, ...); Legal entity, liability issues; Construction and plant permission; Labor and social insurance law; Waste legislation; Documentation for authorities; Privacy regulation - 8 hours

- DAY 6 – ON SITE

Site visit: Visit of a Biomass Plant and discussion – 8 hours

- DAY 7 – IN CLASS

Exam. Summary, Diploma - 5 hours

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SOLAR MODULE
(solar thermal)

- DAY 1 – IN CLASS

Entrance Test & Introduction: Project Diagnosis & Entrance Exam; Equipment and Implementation; Solar applications; Health and safety precautions; Installation and Equipment; Project Steps; Assignment - 8 hours

- DAY 2 – ONLINE

Equipment & Law and Regulation: Equipment and Implementation; Assignment; Law and Regulation; Permits; Product Certification; Warranty and Insurance; Environmental Legislation; Assignment - 8 hours

- DAY 3 – ON SITE

Equipment & Law and Regulation: Equipment and Implementation; Validation of Day 2; Law and Regulation; Validation of Day 2; Project Design; Energy needs; Assignment – 8 hours

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SOLAR MODULE
(solar thermal)

- DAY 4 – ON SITE

Entrance Test & Introduction: Equipment and Implementation; Project Design; Run of Power Plant; Assignment - 8 hours

- DAY 5 – IN CLASS

Design & Economy: Economy; Financing - business plan, subsidies, investment (CAPEX); Energy savings; Operational expenditure (OPEX); Project Design; Group assignment - 8 hours

- DAY 6 – IN CLASS

Run of power plant & Final Exam: Run of power plant; Troubleshooting and Optimizing; Major Failures; Environmental Issues; Exam; Summary; Diploma – 8 hours

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SOLAR MODULE
(photovoltaic)

- DAY 7 – IN CLASS

Entrance Test & Introduction: Project Diagnosis & Entrance Exam; Equipment and Implementation; Solar applications; Health and safety precautions; Installation and Equipment; Project Steps; Assignment - 8 hours

- DAY 8 – ONLINE

Equipment & Law and Regulation: Equipment and Implementation; Assignment; Law and Regulation; Permits; Product Certification; Warranty and Insurance; Environmental Legislation; Assignment - 8 hours

- DAY 9 – ON SITE

Equipment & Law and Regulation: Equipment and Implementation; Validation of Day 2; Law and Regulation; Validation of Day 2; Project Design; Energy needs; Assignment – 8 hours

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SOLAR MODULE
(photovoltaic)

- DAY 10 – ON SITE

Entrance Test & Introduction: Equipment and Implementation; Project Design; Run of Power Plant; Assignment - 8 hours

- DAY 11 – IN CLASS

Design & Economy: Economy; Financing - business plan, subsidies, investment (CAPEX); Energy savings; Operational expenditure (OPEX); Project Design; Group assignment - 8 hours

- DAY 12 – IN CLASS

Run of power plant & Final Exam: Run of power plant; Troubleshooting and Optimizing; Major Failures; Environmental Issues; Exam; Summary; Diploma – 8 hours

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ICT MODULE

- DAY 1 – ONLINE

Basics on ICT: General introduction; Computer classification; Computer components; Computer ports and connectors; Touchscreen; Data management using files and folders; Understanding operating system; Introduction to Windows 10; Introduction to Mac; Software installation; TCP/IP; test/assignment - 8 hours

- DAY 2 – ONLINE

Safety Surfing and Communication: Web Research with a Bowser; Mail management; Netiquette; Skype tutorial; General principles on IoT; Internet Malware classification; Cybersecurity attack; Windows 10 Security System; Antivirus software; Data backup; The Cloud; Test/assignment - 8 hours

- DAY 3 – ONLINE

MS Office applications: Microsoft Word Tutorial; Microsoft Power Point; Microsoft Excel Tutorial; Test/assignment – 8 hours

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ICT MODULE

- DAY 4 – IN CLASS

General in-class activity: In-class activity based on issues arising from the study of on line material; Strategy of file naming; Class activity on store digital data; Test/assignment - 8 hours

- DAY 5 – ONLINE

Excel practice and tasks: Word application; Practice; Test/assignment - 8 hours

- DAY 6 – IN CLASS

Excel practice and tasks: Spreadsheets application; Practice; Test/assignment – 8 hours

- DAY 7 – IN CLASS

Excel practice and tasks: Spreadsheets application; Practice; Test/assignment – 8 hours

- DAY 8 – IN CLASS

Creating reports for investors and stakeholders: PowerPoint application; Practice; Personal/Group activity; Test/assignment

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ICT MODULE

- DAY 9 – IN CLASS

Informatic RES plant management tools: Illustration of features of specific software to manage the RES plant and interpret the results correctly; The Internet of Things applied on RES production; Test/assignment - 8 hours

- DAY 10 – IN CLASS

Exam - 2 hours

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