

REGISTRATION

Hands-on Short Course on Design and Operation of Torrefaction Technologies

Date: Flexible

(Please Type or Print Clearly) Name: _____

This name will appear on your certificate of Training

Title: _____

Company: _____ Mailing

Address: _____

City: _____ State: _____ Zip

Code: _____ Country: _____

Phone: _____ Fax: _____ E-

mail: _____

Name Card (you would like to be called): _____

Name and phone number to contact in case of emergency: _____

The registration fee per person is US \$2,000. Participants must inform BETA Lab of preferred exact dates of training program. There is an additional required Equipment User Fee amounting to \$3,500 to be shared by all the participants. If there is only one participant, the total training cost is \$5,500.

Applications are accepted under the terms described in the accompanying short course program or a revised program agreed upon by participant and BETA Lab. Payment by check drawn on a U.S. bank or an International cashier's check in U.S. dollars must accompany applications.

Method of Payment (mark one)

Checks payable to Texas A&M AgriLife Research.

If paying with credit card please include type of card:

American Express Visa Master Card Diners Club

Card Number: _____

Name of Card Holder: _____ Exp. Date: _____

Signature: _____ Total Amount: \$ _____

Mail or fax this application to:

Cheryl Yeager
Business Coordinator
Biological and Agricultural Engineering Department (BAEN)
Texas A&M University
College Station, Texas 77843-2476 U.S.A.
Tel: 979-845-3994; Fax: 979-845-3936
E-mail: business@baen.tamu.edu

Hands-on Short Course on the Design and Operation of Torrefaction Technologies (1 Week)

Prepared and Organized by the BioEnergy Testing and Analysis Lab (BETA Lab)
Biological and Agricultural Engineering Department
College of Agriculture and Life Sciences (COALS)
Texas A&M University
College Station, TX 77843-2476 U.S.A.

Training Pedagogy

This training program is a combination of Lectures and Computational Exercises in the morning and actual hands-on exercises in the afternoon. Each training lecture is loaded with engineering calculations and the design of Torrefaction facility. At the end of the training program, the trainee will have learned all basic skills in becoming a skilled operator of a Torrefaction facility or process engineer. The trainee will also receive a hardcopy of complete set of training materials.

Schedule of Lectures/Computations and Lab Activities

Sunday or Day 0, Arrival of Trainee

Monday or Day 1

Morning Activities

Tour of Lab Facilities of Overview of Training Program

Lecture 1: Overview of Torrefaction Process and Products Produced

Lecture 2: Feedstock for Making Biooil, Biochar and Synthesis Gas

Computation 1: Computations and Yield Prediction and Sizing of Plants

Afternoon Activities

Lab 1: Biomass Analysis Exercises in Preparation for Thermal Conversion (HV, Proximate and Ultimate)

Tuesday or Day 2

Morning Activities

Lecture 3: Equipment and Instruments Required for Torrefaction Process

Lecture 4: Design of Slow and Fast Torrefaction facility

Computation 2: Calculations of exposure time for biomass in various types of Torrefaction facility

Afternoon Activities

Lab 2: Measurements of syngas in a gas chromatograph and biooil and biochar

Wednesday or Day 3

Morning Activities

Lecture 5: Difference between Torrefaction and Pyrolysis

Lecture 6: The Fast Torrefaction Processes/Torrefaction Facility Design

Computation 3: Fluidization Calculations

Afternoon Activities

Lab 3: Torrefaction of various biomass using batch reactor

Thursday or Day 4

Morning Activities

Lecture 7: Equipment and Technology for Biooil, Biochar and Syngas Production:

Lecture 8: Advanced Torrefaction Processes and Upgrade of Biochar into Activated Carbon

Computation 4 Equipment Design and Control Systems Introduction

Afternoon Activities

Lab 4: Operation of Continuous Flow Auger Torrefaction facility

Friday or Day 5

Morning Activities

Lecture 9: Strategies for the Establishment of Small and Medium-Scale Biofuels Plant

Lecture 10: Design of Commercial Systems and Economics of Torrefaction Products

Computation 5: Development of Business Plan and Simple Economic Calculations and Projections

Afternoon Activities

Lab 5: Operation of State-of-the Art Fluidized Bed Torrefaction facility

Saturday or Day 6

Field Visit and Tour:

- a. Visit a Commercial Biofuel Facility (Dayton, Texas)
- b. Awarding of Certificates

Summary of Training

Time	Day of the Week						
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
AM	Arrival of Trainee	Tour/Lect 1 Lecture 2 Comp 1	Lecture 3 Lecture 4 Comp 2	Lecture 5 Lecture 6 Comp 3	Lecture 7 Lecture 8 Comp 4	Lecture 9 Lect 10 Comp 5	Tour of Commercial Facility
		Lunch Break					
PM		Lab 1 Biomass Analysis	Lab 2 Product Analysis	Lab 3 Batch Torrefaction	Lab 4 Auger Torrefactio	Lab 5 Fluidized Beds	Awarding and Trainee Departure

For additional technical information, write, call, fax or e-mail to:

Dr. Sergio C. Capareda

Head, BioEnergy Testing and Analysis Lab

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