SEA-ABT

Association for supporting education and training at the Academy for Beverage Technology

SHORT COURSE CERTIFICATE Reference 2101

Name of the course	**Technology in Plastic Waste Recycling (Công nghệ tái chế chất thải nhựa)**	
Contact person	first name	Dinh Trinh
	surname	Tran
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Workload for participants	5 days a 6 hours	
Learning Outcomes (LO)	After attending this course, participants - have a basic understanding how plastic materials are produced, which properties they can have and how plastics are identified and analysed; - are able to explain the recycling chain with collection, sorting and processing; - recognize technologies in sorting and in processing of plastic waste; - are able to characterize processes for the recycling of other recyclables and disposal of residues	
Target groups	Employees from companies and environmental management ralated governmental bodies	
Prerequisites	Do not need specific skills and/or knowledge. However, basic concepts on plastic recycling, plastic analysis, and thermal treatment of plastic waste will fortify students to get the most out of this course	
Description of the course	This course provides basic information about the life cycle of plastic materials. The main processes in primary production of plastics such as extrusion, moulding, and calendaring, are described and plastic markets are analysed. Material properties in terms of physical and mechanical properties are given. Major procedures for the identification of polymers and analytical procedures are explained. As recycling is built on a chain of processes (collection – sorting – processing), waste collection schemes are explained. Incentives for the separate collection to motivate users are explained. For sorting of plastic waste, technologies such as magnetic and electrostatic separation, screening, density separation, and optical sorting are shown; a case study of a sorting plant gives further details. For the follow up processing, typical recycling technology such as granulation, washing, drying, and extrusion are given to explain material recycling. A case study of a PET recycling facility gives more details. To enable a better understanding of the context of plastic recycling, the processing of recyclables such as waste paper, glass, metals, organic waste and electronic waste is explained. As a technology to treat residues and mixed waste, the technology of thermal waste treatment is shown.	
Overview of the syllabus	- Primary production of plastics, (ppt slides) - Plastic properties and analysis (ppt slides) - Plastic properties and analysis, sample preparation (video) - Plastic properties and analysis, XRF (video) - Plastic properties and analysis, FTIR (video) - Waste collection (ppt slides) - Waste collection, shredding and milling (video) - Waste collection, TOC (video) - Waste collection, waste sorting and sampling (video) - Waste collection, heating value (video) - Waste collection, elution (video) - Waste collection, case study: waste transfer station Ho Chi Minh City (Photos) - Plastic waste sorting (ppt slides) - Plastic waste sorting, Plastic recycling plant Vientiane, Laos (Video)	

	- Plastic waste sorting, Plastic recycling plant Vientiane, Laos (Photos) - Plastic waste sorting, Magnetic separator (Video) - Plastic waste sorting, Ballistic separator (Video) - Plastic waste sorting, Near Infrared Spectroscopy (Video) - Plastic waste sorting, Plastic sorting facility in Lower Austria (Photos) - Plastic waste sorting, Plastic sorting facility in Dresden (Photos) - Plastic waste sorting, Visit of 26.3 cp.ltd (Video) - Plastic waste sorting, Visit of Linh Chien Company (Video) - Plastic waste sorting, Visit of Plastic Recycling Plant in Hanoi (Video) - Plastic waste sorting, Visit of Craft Village in Vietnam (Video) - Plastic waste sorting, Wongpanit Company (Video) - Plastic waste recycling technology (ppt slides) - Processing of recyclables (ppt slides) - Thermal treatment and energy recovery (ppt slides)
Teaching and learning methods	This course will be taught in front-of-class teaching and in the future with Flipped Classroom and PBL learning method.
Assessment of LO	The final evaluation of this course will be provided by combining the following parts: - Attendance & course contribution: 20% - Midterm exam by project solving: 20% - Final exam: 60%.
Trainer	• Dr. HA Minh Ngoc • Dr. DANG Nhat Minh • Dr. PHAM Thanh Dong

Reviewer 1	Prof. Dr.-Ing. Kerstin Kuchta, Technical University Hamburg
Reviewer 2	Dr. Sujitra Vassanadumrongdee, Chulalongkorn University, Bangkok
Date of Certification	2021-04-14
Expiration of Certification	2024-04-13

Vienna, 2021-04-14 Dr. Gerhard Schleining

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