Optimise
Optimal Systems Engineering Sdn Bhd
Engineering Sustainability

In-House Workshop on
PRODUCT CARBON FOOTPRINT

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Workshop Overview

Join our Product Carbon Footprint (PCF) Training Program to gain a comprehensive understanding of the environmental impact of your products, and how to measure and reduce their carbon footprints over the life cycle stages.

Workshop Objective

This training program focuses on imparting practical expertise in establishing product carbon footprint (PCF) for reporting and stakeholder communication with compliance to the ISO 14067:2018 standard, which is increasingly important among partners in a green value chain. The agenda spans two days and provides a comprehensive understanding on the environmental impact of your products towards climate change, including how to measure and reduce their carbon footprints throughout the life cycle stages, with a strong emphasis on practical application. By the end of the training, attendees will gain a thorough understanding and hands-on experience that will be useful for performing PCF assessments for their products

Workshop Learning Outcome

- Gain awareness and drive to synergise energy and emissions management.
- Pave the way toward net-zero carbon emissions.
- Understand the concept and principles of PCF accounting and reporting, including the goal and scope, life cycle inventory, life cycle impact assessment, and reporting.
- Quantify life cycle GHG emissions and PCF
- Report the results based on ISO 14067:2018 standards.

Who Should Attend

This training program is suitable for anyone interested in sustainability and reducing their carbon footprint, including environmental consultants and sustainability managers. By the end of this program, you will have a solid understanding of PCF principles and methodologies and be able to apply them to real-world scenarios.

Course Outline

Road to Net-Zero: Integrated Energy-Emission Management:

Gain understanding and awareness on the cause and impacts of climate change . Explore the imperatives of taking actions toward net zero. Discover the critical need for, and the contribution of energy on net zero emissions . Describe the concept of emissions scope, GHG inventory, and carbon footprint. Apply energy-emissions management framework toward net-zero carbon emissions.

Introduction to Product Carbon Footprint:

Discover what a carbon footprint of products is and how it relates to corporate greenhouse gas (GHG) inventory. Understand the differences in scope and objective between the life cycle assessment and PCF. Explore the suitable standards and guidelines used to quantify and report PCF across the life cycle of a product. Learn about the specific principles and requirements for accurate PCF reporting.

Defining the Goal and Scope of PCF:

Gain a deeper understanding of the key components in developing the carbon footprint of a product. Learn the relationship between different goals and scopes of a PCF, including the impacts on the system boundaries and life cycle stages to be studied.

Course Outline

Development of Life Cycle Inventory for PCF:

Identify the activities within the system boundary based on a life cycle analysis to create mass flows of material uses, energy uses and so on. Understand the activity data requirements to create the life cycle inventory for a product. Discover the potential sources of activity data, and the differences in the quality of primary and secondary data. Learn the role of upstream and downstream suppliers in the data gathering for PCF and the importance of active supplier engagement to produce high quality PCF.

PCF Quantification Methodology and Calculation:

Gain a deeper understanding of the overall calculation methodology to quantify the PCF for a product via the life cycle impact assessment method. Apply essential emission factors to case study data in interactive working sessions for practical application of the PCF quantification approach. Discover how multi-output processes and cut-off criteria in real-world situations can affect the allocation of GHG emissions in the PCF calculation. Gain hands-on experience on how to consolidate calculated emissions in order to report the PCF of a product.

PCF Verification and Reporting based on ISO 14067:2018:

Learn about the verification requirements for PCF establishment and the methods to verify the calculations based on the ISO 14067:2018 standard. Discover the additional information to be reported with PCF to effectively communicate the carbon footprint of products to consumers.

Trainers' Profile

TRAINER 1

ASSOCIATE PROF IR DR LIM JENG SHIUN

Associate Professor Ir Dr Lim Jeng Shiun is the Director of Products and Service, Optimal Systems Engineering Sdn Bhd, a UTM spin-off company specialising in providing solutions related to energy conservation and GHG emissions reduction. He is also the Deputy Director of Process Systems Engineering Centre (PROSPECT), Universiti Teknologi Malaysia. His core expertise is in the area of innovative development and application of process systems engineering techniques for resource conservation, and energy and carbon planning. He is also a professionally Certified Energy Manager, Certified Energy Auditor, Accredited Energy Measurement & Verification Professional and a Type 1 Type 2 REM (Registered Energy Manager) certified by the Energy Commission of Malaysia.

He is the trainer of the Energy Management Trainer Course conducted by MGTC to certify the Energy Manager. He is also the instructor for MSc Energy Management in UTM, sharing knowledge related to energy efficiency and energy management. As an engineer in practice, he has applied the output of his research work to consultancy projects for the industrial community. He has been extensively involved in more than 35 industrial-based projects for various companies and government agencies. The key clients include local industries and multinational companies such as BERNAS, FABER MEDISERVE, SHELL, OLEON in Malaysia and PERTAMINA in Indonesia.

He has assisted those companies to identify energy-saving opportunities worth millions of dollars and GHG reduction opportunities through the use of process integration and process systems engineering approaches in the energy audit and GHG emissions accounting projects. He has shared his project experience in his co-authored book titled Pinch Analysis for Energy and Carbon Footprint Reduction, published by the Institution of Chemical Engineers (IChemE). He has been invited to share his experience on Net Zero carbon for industry and facilities, including on Net Zero Carbon for Palm Oil Industry organised by IChemE.

TRAINER 2

PROF IR TS DR ZAINUDDIN ABDUL MANAN

Prof Ir Ts Dr Zainuddin Abdul Manan is a professor of chemical and energy engineering, the founding director of UTM Process Systems Engineering Centre (PROSPECT), founding Dean of UTM Faculty of Chemical and Energy Engineering, founder of UTM Sustainable Energy Management Program and the CEO and founder of the UTM spin-off company OPTIMISE Sdn Bhd. He began his career as an engineer in PETRONAS and Hume Industries and has been an academic leader, educator, researcher, consultant and professional coach for over 25 years. He completed over 100 R&D & consultancy projects serving local and multinational companies, has numerous patents and over 450 publications that include 20 books/ chapters, 230 refereed journals and 250 conference proceedings on energy and resource conservation using process integration techniques. He is a co-author of the globally referred Book on Process Integration and Intensification – Saving Energy, Water and Resources. Zain is a UK/EU chartered engineer, a Fellow IChemE (UK), Fellow of Academy of Sciences Malaysia, a professional engineer, a professional technologist, a certified energy manager, a Type 1 Type 2 REM (Registered Energy Manager) and a certified trainer for ASEAN energy managers. He has coached professionals from over 500 organisations and delivered over 400 invited talks in professional courses, conferences and seminars worldwide. Zain chaired the Academy of Sciences (ASM) Energy Committee, the ASM Net Zero Task Force and the Energy Efficiency and Conservation Act (Thermal Energy) Drafting Committee under the Malaysian Ministry of Energy. He founded and spearheaded the UTM Sustainable Energy Management initiative that led UTM to save over USD 7 million energy costs (2011-2022), to win the National & ASEAN Energy Awards, and to be ranked 1st globally by Time Higher Education on SDG7.

Trainers' Profile

TRAINER 3

PROF IR TS DR SHARIFAH RAFIDAH WAN ALWI

Prof Ir Ts Dr Sharifah Rafidah Wan Alwi is a Professor in the Faculty of Chemical and Energy Engineering, Universiti Teknologi Malaysia. She previously helmed as the Director of Process Systems Engineering Centre for ten years (2011 to 2021). She is an expert resource minimisation consultant for multiple industries and is among the leading researchers in resource integration technique development. Prof Sharifah is also the co- founder and Director of Optimal Systems Engineering Sdn Bhd, a UTM Spin-off company. She has been extensively involved in 80 research projects, 17 industrial based projects for various companies and government agencies and has trained engineers from more than 300 companies in the field of sustainable engineering design and management. Together with her team, they have developed 7 resource minimisation software. Sharifah has won various international and national awards such as Green Talents 2009 (Germany), IChemE Highly Commended Sir Frederick Warner Prize 2011 (UK), ASEAN Young Scientist and Technologist Award 2014, National Young Scientist Award 2015, ASEAN-US Science Prize for Women 2016 in Energy Sustainability, Malaysia Research Star Award 2016, 2018, 2019, Top Research Scientists Malaysia 2018 and Sarawak State - International Women Award 2021. She was listed as 'Asian Scientist 100' in 2017 and 'Asia's Rising Scientists' in 2020, and '8 Women Scientists from Asia You Should Know' in 2021 by AsianScientist.com. Sharifah is also the Associate Editor for Journal of Cleaner Production and UTM Sustainable Energy Management System advisor. She has also served as the Chair for the Science Leadership Working Group under Young Scientist Network, Academy of Sciences Malaysia (YSN-ASM) and Chair for Malaysia IChemE Young Engineer Group (YEG). Sharifah is also a professional engineer, a professional technologist, a UK/EU chartered engineer, a certified energy manager, a registered energy manager (Type 1 and 2) and a certified trainer for ASEAN energy managers.

Workshop Schedule

DAY 1		
Time	Topic	Learning Outcome
8:30 am - 9:00 am	Registration	
9:00 am - 10:30 am	Road to Net-Zero: Integrated Energy-Emission Management	• Gain insights on the imperatives for GHG management on achieving net-zero goals. • Familiarize with GHG inventory, product carbon footprint, emission scope and sources.
10:30 am - 10:45 am	Break	
10:45 am - 12:00 am	Introduction to Product Carbon Footprint (PCF)	• Understand the basics and objectives of product carbon footprint (PCF). • Differentiate between greenhouse gas (GHG) inventory, PCF, and life cycle assessment. • Understand the reporting principles for PCF from a life cycle perspective • Learn about the global standards and product-specific product category rules (PCR) for PCF reporting
12:00 am - 13:00 pm	Defining the Goal and Scope of PCF	• Understand the key components in the development of PCF across the life cycle of a product • Learn the significance of PCF goal and scope definition
13:00 pm - 14:30 pm	Lunch	
14:30 pm - 17:00 pm	Development of Life Cycle Inventory for PCF	• Understand the general requirements for data and emission factors in PCF quantification - Understand the role of upstream and downstream suppliers in the data gathering for PCF

Workshop Schedule

DAY 2		
Time	Topic	Learning Outcome
8:30 am - 9:00 am	Registration	
9:00 am - 10:00 am	PCF Quantification Methodology and Calculation – Part 1	• Gain overview of the PCF calculation methodology across the life cycle stages of a product • Understand the use of life cycle impact assessment for the quantification of PCF • Determine and apply suitable emission factors to calculate GHG emissions
10:00 am - 10:15 am	Break	
10:15 am - 13:00 pm	PCF Quantification Methodology and Calculation – Part 2	• Determine and apply suitable emission factors to calculate GHG emissions • Apply the suitable approaches to allocate GHG emissions to multiple outputs
13:00 pm - 14:30 pm	Lunch	
14:30 pm - 16:30 pm	PCF Quantification Methodology and Calculation – Part 3	• Apply the suitable approaches to allocate GHG emissions to multiple outputs • Learn how to consolidate calculated emissions for the reporting of PCF, and GHG emissions associated with different life stages of a product.
16:30 pm - 17:00 pm	PCF Verification and Reporting based on ISO 14067:2018	• Understand the verification requirements for PCF • Understand the key information to be reported with PCF based on the ISO 14067:2018 standard

What Our Trainees Said

SUJA RAJAH

The trainer is well knowledge in how to deliver the information

ADLAN IBRAHIM

This training is very useful in order to get general knowledge on the Product Carbon Footprint reporting.

INTAN SYARENA

The trainer able to simplified the whole process and spot the related emission for our company