

ECCS Academy

A three-webinar series on Life-Cycle Driven Design of Steel Structures (Autumn 2024)

Webinar series Life-cycle driven design of steel structures

This webinar series will explore the strategies to reduce embodied carbon in steel construction: each session will be tailored to a specific topic; Composite Construction, High Strength Steel, and AI-powered steel construction. The webinars focus on topic-specific LCA steps, methods for calculating embodied carbon, sensitivity studies, and strategies for reducing embodied carbon relevant to each theme. Including hands-on exercises, real-world examples, and interactive discussions, the series is designed to deepen participants' understanding of specialized areas. At the end of the webinar, participants will be able to calculate the embodied carbon of a steel structure, with a focus on composite construction, high-strength steel, and AI-powered steel construction. Additionally, they will learn techniques and strategies for reducing embodied carbon emissions and analyze real-world case studies of mono and multi-storey steel structures.

Webinar 1: Life-cycle driven design of steel composite construction

Abstract: This training, part of our series on reducing embodied carbon in steel construction, is crafted by [Alper Kanyilmaz](#) and [Florentia Kavoura](#). We will provide a comprehensive overview of design strategies, theoretical framework, and methods to reduce embodied carbon in steel construction by implementing composite action (steel-concrete and steel-timber) in the structural designs. The training will include hands-on exercises, real-world examples, and interactive discussions to consolidate the understanding of the topic. In the end, participants will be able to calculate the embodied carbon of a composite steel structure during the conceptual design stage, understand techniques and methods for reducing embodied carbon emissions by composite action, perform design verifications on steel-concrete composite systems according to the Eurocode provisions, and analyze real-world case studies of composite steel components and structures.

Save the dates / webinar 1:

Session 1: Tuesday 22/10/24 (10:00 – 12:00)

Session 2: Thursday 24/10/24 (10:00 – 12:00)

Session 3: Tuesday 29/10/24 (10:00 – 12:00)

Session 4: Thursday 31/10/24 (10:00 – 12:00)

Webinar 2: Higher Strength & Lower Carbon Steel Structures

Abstract: This webinar is the second episode of our autumn webinar series. Together with [Alper Kanyilmaz](#) and our 2nd expert who will be known soon, we will explore design strategies, theoretical frameworks, and methods to reduce embodied carbon in steel construction by using high strength steels (HSS) ranging from S460 to S960. The webinar will cover life-cycle analysis of high strength steel elements - such as open and tubular profiles, trusses, beams, and columns - and their application in various structures, including buildings, bridges, offshore platforms, and renewable energy infrastructure. We will explore every stage of the life cycle, from raw material extraction and transport to manufacturing and end-of-life considerations. You will explore the best practices and innovative approaches for integrating HSS into structural designs, optimizing both cost-efficiency and carbon reduction. Through hands-on calculations, you will learn to assess the embodied carbon of steel structures at the conceptual design stage and discover actionable design strategies to minimize carbon emissions using high-strength steel. By the end of this webinar, you will be equipped to perform design verifications for high-strength steel systems in compliance with Eurocode and relevant standards, enabling you to deliver sustainable, low-carbon solutions in your projects.



Save the dates / webinar 2:

Session 1: Tuesday 12/11/24 (10:00 – 12:00)

Session 2: Thursday 14/11/24 (10:00 – 12:00)

Session 3: Tuesday 19/11/24 (10:00 – 12:00)

Session 4: Thursday 21/11/24 (10:00 – 12:00)

Webinar 3: AI-powered Life Cycle Driven design of Steel Structures

Abstract: The third webinar in our autumn series, titled “AI-powered Life Cycle Driven Design of Steel Structures”, designed by [Alper Kanyilmaz](#) and [Paul Kassabian](#), will explore the role of artificial intelligence in the life-cycle driven design of steel structures. This session will begin by identifying the key pain points currently faced by the steel construction industry such as inefficiencies, high embodied carbon, and maintenance challenges. It will then demonstrate how different AI techniques can be strategically applied to address these issues. The webinar will show how to embrace AI to reduce embodied carbon, enhance structural efficiency, and predict maintenance needs, ultimately leading to more sustainable steel construction practices. By the end of the webinar, participants will have learned the basics of various AI techniques and seen real case examples, enabling them to leverage AI to optimize the life-cycle performance of steel structures and achieve a balance between strength, cost efficiency, and environmental sustainability.

Save the dates / webinar 3:

Session 1: Tuesday 03/12/24 (15:00 – 17:00)

Session 2: Thursday 05/12/24 (15:00 – 17:00)

**New time
slots !**