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Sustainability 1.0 in Industry 5.0: Bringing together old thinking and new tools

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ABSTRACT

As we have moved from Industry 1.0 to 5.0, the number of design objectives facing engineers has certainly more than quintupled. Sustainability and circularity concerns have recently been added to the list of design objectives and constraints. These objectives are easy to define in the abstract, but difficult to define concretely, and perhaps even more difficult to implement. This presentation will try to address both challenges.

This presentation will survey the current challenges facing engineers, with examples from design, manufacturing, and logistics. We will discuss actionable definitions of sustainability and circularity. In light of those goals, we will provide an overview of methods and tools available, focusing on life cycle assessment, which underlies most quantitative approaches. Finally, the examples will help to illustrate not only the application, but the value, of integrating sustainability and circularity perspectives into design.

The audience will develop basic fluency about key concepts in sustainability circularity and will be ready to implement sustainability thinking in their work. With the discussion of methods and tools, the audience will also be primed to dive deeper in future.