

**Session Title: Technologies for circular economy and sustainability in industry**

**Keywords:** Life Cycle Assessment, green supply chain; environmental sustainability; industrial technologies; eco-design

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**Deadlines**

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**Abstract**

In recent years, linear production models have led to many environmental issues, such as the reduction of available raw materials, e.g. fossil fuels, and the creation of pollution not only in the air, due to the release of greenhouse gas emissions into the atmosphere, but also in soil and water, due to the big amount of waste generated and often difficult to manage. To limit and overcome these problems, a new economic and technological paradigm has been widespread, namely the so-called circular economy, which involves a radical rethinking of products and production processes. This revolution mainly involves industries, that must adopt sustainable production and consumption processes, consciously and efficiently manage the Planet's resources, limit waste and scrap as much as possible, and extend the life of their products, making them recyclable and reusable.

The transition towards a circular economy can easily be facilitated by the development of new technologies that open innovation areas for greener design and production. This session thus aims to investigate, assess, and present technologies and solutions able to increase the sustainability of processes and products, enhancing the circular economy paradigm in industries. Obviously, the benefits of each new application in this context should be quantify and show to citizens and communities and, as the preferred option, this involves the use of Life Cycle Assessment. Research topics can include technologies, solutions, activities or techniques that allow industries to

- improve the efficiency of processes and therefore decrease energy consumption;
- calculate, lessen or compensate greenhouse gas emissions of their products;
- limit wastes and scraps of manufacturing processes;
- design eco-sustainable packaging and items;
- protect the environment from air, soil and water pollution;
- recycle, reuse or recover products;
- improve landfill or incineration processes;
- enhance food shelf life, reducing wastes and expired products along the supply chain;
- implement processes to track resource consumption and product utilization;

- avoid deforestation and land degradation;
- use water efficiently, without leakage and dispersion;
- overall enhance ecological production and distribution.