

CALL FOR PAPERS

THEMATIC SECTION: Production engineering towards carbon neutrality: Advancing research, innovation, and societal impact

SUBMIT YOUR PAPERS BY JUNE 30, 2026

Achieving carbon neutrality is a global imperative, with critical implications for industries, society, and environmental sustainability. This thematic section will explore the role of Production Engineering in enabling the transformation toward carbon neutrality by addressing systemic challenges, leveraging technological innovation, and fostering interdisciplinary collaboration. The rationale for this thematic focus is grounded in the growing urgency to align industrial operations with international climate goals such as the Paris Agreement, which aims to limit global warming to well below 2°C above pre-industrial levels (Zhang et al., 2024).

Production Engineering plays a pivotal role in enabling this transformation, as it intersects with critical areas such as supply chain design, operational efficiencies, technological innovation, and social systems. This thematic section aims to explore how advances in Production Engineering contribute to achieving carbon neutrality, addressing both challenges and opportunities in this domain while considering the societal and labor dynamics of transitioning to a low-carbon economy.

This proposal seeks to foster interdisciplinary discourse on how production systems can evolve to align with the United Nations' Sustainable Development Goals (SDGs), specifically Goal 13: Climate Action, and address complex interdependencies in social and industrial systems. By drawing from both theoretical insights and empirical studies, the section will provide actionable strategies for academia, practitioners, and policymakers.

The Guest Editors and the Editor-in-chief of the [Production journal](http://www.prod.org.br/) invite researchers to submit research papers with a strong scientific background and practical relevance. The manuscripts should be based on clear and relevant motivation, research goals, and research methodology to offer a significant contribution to the literature. Empirical studies supported by appropriate theoretical or conceptual frameworks with original data and relevant findings are very welcome.

About the Journal

The **Production journal** (formerly known as **Produção** or **Producao**) is the flagship publication of the **Brazilian Association of Production Engineering (ABEPRO)**. Established in **1990**, the journal (ISSN 0103-6513) serves as a key platform for disseminating academic research in **Production Engineering and Operations Management**.

Its mission is to provide an internationally respected channel for publishing original and relevant research in Operations, Manufacturing, Industrial Engineering, and Production Engineering and Management. The journal is dedicated to fostering advancements and knowledge exchange in these critical areas of study and practice.



Production Journal

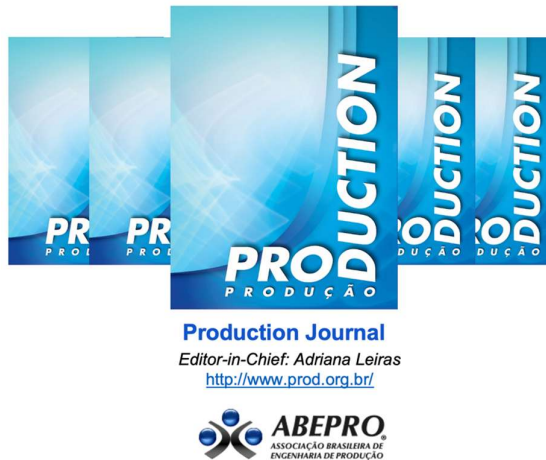
Editor-in-Chief: Adriana Leiras

<http://www.prod.org.br/>



This thematic section will invite contributions in the following areas, emphasizing both technical and social dimensions of the transition toward carbon neutrality:

- 1. Innovative decarbonization technologies**
 - Development and application of carbon capture, utilization, and storage (CCUS) technologies within production systems.
 - Exploration of modular and scalable low-carbon technologies for industrial processes.
- 2. Low-carbon products and manufacturing**
 - Strategies for minimizing energy and material use in production processes
 - Advances in development of low-carbon products
 - Advances in design for energy efficiency and eco-friendly manufacturing.
- 3. Green supply chain management**
 - Solutions for reducing Scope 3 emissions across global supply chains.
 - Enhancing supplier collaboration to align with carbon-neutral goals.
 - Role of reverse logistics in achieving circular economies.
- 4. Sustainable energy integration**
 - Adoption of renewable energy sources and microgrids in industrial production.
 - Optimization of energy systems for carbon-neutral operations.
- 5. Circular economy and carbon offsetting**
 - Integrating circular economy principles into production systems.
 - Evaluation of carbon offset strategies, including reforestation and clean energy projects.
- 6. Social implications of carbon neutrality**
 - Changes in labor dynamics and skill requirements in transitioning to a low-carbon economy.
 - Strategies for workforce reskilling and inclusion in sustainable industries.
 - Social justice considerations in the redistribution of resources and opportunities.
- 7. Policy and regulatory implications**
 - Impact of global carbon pricing, cap-and-trade systems, and environmental reporting standards on production systems.
 - The role of national and regional policies in promoting industrial decarbonization.
- 8. Complex systems modelling**
 - Capturing interdependencies within industrial ecosystems and their impact on carbon neutrality.
 - Application of complex systems modelling techniques and approach (e.g., complex networks, systems thinking, system dynamics, agent-based modelling etc.) to identify critical leverage points in production networks.
 - Resilience and adaptability of production systems under uncertain environmental, social and economic conditions.
- 9. Social and environmental trade-offs**
 - Analyzing the societal costs and benefits of transitioning to a low-carbon economy.
 - Strategies to ensure equitable access to the benefits of decarbonization, particularly in marginalized communities.
- 10. Digital innovations**
 - The role of Industry 4.0 technologies, such as IoT, AI, and blockchain, in monitoring and achieving carbon-neutral production.
 - Digital twins and predictive analytics for optimizing energy and material flows in production systems.
- 11. Multi-stakeholder engagement**
 - Collaborative strategies among governments, industries, NGOs, and communities for implementing sustainable practices.
 - Case studies of successful partnerships fostering carbon-neutral innovations.
- 12. Economic and market mechanisms**
 - Exploring the role of green financing and investment in enabling sustainable production.
 - Incentivizing businesses to adopt low-carbon strategies through innovative market mechanisms.



Submissions

For author guidelines, please refer to <https://prod.org.br/instructions>. Authors must submit a detailed cover letter highlighting the manuscript's fit to the journal's Editorial scope, theoretical and practical relevance, aims, methods, main results, and original theoretical, empirical, and/or methodological contribution.

Submission site: <https://mc04.manuscriptcentral.com/prod-scielo>, selecting the “Thematic Section - Production engineering towards carbon neutrality: Advancing research, innovation, and societal impact”.

Important dates:

- Submission opens: April 2025
- **New Submission Deadline: June 2026**

Guest Editors:

- Daniel Guzzo (Technical University of Denmark – Denmark)
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References

ZHANG, Q., WONG, C. W. Y., & KLASSEN, R. (2024). Carbon neutrality: Operations management research opportunities. *Journal of Operations Management*, 70(3), 344–354. <https://doi.org/10.1002/joom.1303>.