

**Mechanical & Materials  
Engineering for Particle  
Accelerators and Detectors,  
2-15 June 2024,  
Sint-Michielsgestel,  
Netherlands**

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**Book of Abstracts**



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Fabrication technologies play a critical role in the development of accelerator components, ensuring high precision, reliability, and compliance with stringent functional and environmental requirements. This work presents an overview of key fabrication techniques used in accelerator technology, including precision machining, welding, sheet metal forming, and advanced multi-technology approaches. The study highlights the importance of machining accuracy, surface integrity for ultra-high vacuum (UHV) and radiofrequency (RF) applications, and material considerations such as purity and magnetic permeability. Additionally, it explores the impact of fabrication workflows, design-for-manufacturability strategies, and the make-or-buy decision process to optimise production efficiency. Integrating cutting-edge simulation techniques and process optimisation methods is also discussed to minimise errors and enhance component longevity. These insights contribute to advancing fabrication processes for the next generation of accelerator technologies.

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