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Twin-Control

A Digital Twin Approach to Improve Machine Tools Lifecycle

- Reviews advances in the application of information and communication technology (ICT) in machine tools and manufacturing, published with open access
- Describes the experimental application of new technologies and includes case studies from industry
- Signposts future developments in manufacturing technology and machine tools

This open access book summarizes the results of the European research project "Twin-model based virtual manufacturing for machine tool-process simulation and control" (Twin-Control). The first part reviews the applications of ICTs in machine tools and manufacturing, from a scientific and industrial point of view, and introduces the Twin-Control approach, while Part 2 discusses the development of a digital twin of machine tools. The third part addresses the monitoring and data management infrastructure of machines and manufacturing processes and numerous applications of energy monitoring. Part 4 then highlights various features developed in the project by combining the developments covered in Parts 3 and 4 to control the manufacturing processes applying the so-called CPSs. Lastly, Part 5 presents a complete validation of Twin-Control features in two key industrial sectors: aerospace and automotive. The book offers a representative overview of the latest trends in the manufacturing industry, with a focus on machine tools.

1st ed. 2019, XVI, 296 p. 225 illus., 220 illus. in color.

Printed book

Hardcover

49,99 € | £44.99 | \$59.99

^[1]53,49 € (D) | 54,99 € (A) | CHF

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