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Titolo	Process Control : Theory and Applications // by Jean-Pierre Corriou
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ISBN	3-319-61143-7
Edizione	[2nd ed. 2018.]
Descrizione fisica	1 online resource (XXIII, 860 p. 382 illus.)
Disciplina	660.2815
Soggetti	Automatic control Chemical engineering Computational intelligence Quality control Reliability Industrial safety Control and Systems Theory Industrial Chemistry/Chemical Engineering Computational Intelligence Quality Control, Reliability, Safety and Risk
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	1. Dynamic Modelling of Chemical Processes -- 2. Linear Feedback Control -- 3. Stability Analysis -- 4. Design of Feedback Controllers -- 5. Frequency Analysis -- 6. Improvement of Control Systems -- 7. State Representation, Controllability and Observability -- 8. Multivariable Control by Transfer Function Matrix -- 9. Discrete-Time Generalities and Basic Signal Processing -- 10. Identification Principles -- 11. Models and Methods for Parametric Identification -- 12. Parametric Estimation Algorithms -- 13. Digital Control -- 14. Optimal Control -- 15. Generalized Predictive Control -- 16. Model Predictive Control -- 17. Nonlinear Geometric Control -- 18. State Observers -- 19. Nonlinear Control of Reactors with State Estimation -- 20. Distillation Column Control -- 21. Examples and Benchmarks of Typical Processes.
Sommario/riassunto	This textbook introduces the topics and theories of process control

step-by-step in increasing complexity, making the learning of detailed techniques and algorithms easier. Whether you are a student starting in control, or an industrial engineer who, at present, only has cursory contact with control, the initial classical approach to continuous control by transfer functions will be of enormous benefit. The more advanced material on discrete control and state-space control, as well as nonlinear control and observers, requires minimal previous knowledge, assisting you to move more easily to the use of high-performance techniques. A range of identification and control methods applicable to industrial processes are accompanied by practical examples, allowing readers to learn the subject both broadly and in depth. The expanded second edition of Process Control explores and introduces detailed topics, such as: new sections on tuning rules for feedback controllers; new sequences for parameter identification such as multi-level and multisinusoidal sequences; improved presentation of optimal control with dynamic optimization and model predictive control; deeper coverage of applications of nonlinear geometric control; expanded coverage of state observers, introducing the unscented and ensemble Kalman filters, the particle filter, the bootstrap filter, and providing more profound treatment of the Luenberger observer and high-gain observer; and more examples of process control. The book helps students to learn by using worked examples throughout the text, along with a downloadable solutions manual for the convenience of instructors. The broad coverage creates an important synthesis of the majority of aspects of process control, which gives a complete view of control theory and possible applications within the field, making the book accessible to engineers and academic researchers alike.
