Special Issue

Physical Modelling and Estimator-Based Control as Basis of Energy-Efficient Actuators

Message from the Guest Editors

This call aims at collecting contributions related to the design and feedback control of actuators in any field of applications, where the physical couplings are exploited to obtain more efficient, highly compact and innovative devices. The call is mainly focused on, but not limited to, the following fields:

- Electromagnetic actuators: innovative designs, model-based optimization and observer-based control using the back-electromotiveforce (bemf)
- Concept and control of devices using Eddy current effects in order to recover energy
- Use of Siebeck-Peltier effects to obtain efficient thermal actuators and corresponding control algorithms
- Piezo-electric system using the back-electro charge force (becf) in control and estimation
- Innovative fluidic actuators in combination with observer-based control.

Moreover, the call also addresses self-sensing effects in feedback-controlled actuators that are implemented by using state and disturbance observers, Kalman Filters or similar estimator structures.

Guest Editors

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Deadline for manuscript submissions

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About the Journal

Message from the Editorial Board

We are just entering the Next Wave of Technology (NWT) where actuators will play the same role as the computer chip did for computers/social media approximately four decades ago. Just in the U.S., production of $1 trillion year of electromechanical systems (vehicles, orthotics, manufacturing cells, freight trains, aircraft, etc.) will be impacted by the NWT, all driven by actuators. Five key trends can be found for the future perspectives: “Performance to Reliability”, “Hard to Soft”, “Macro to Nano”, “Homo to Hetero” and “Single to Multi functional”. We invite papers that primarily impact these economic sectors; those illustrating basic scientific principles are also welcome.

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