

## **High-Altitude Wind Power Generation**

Lorenzo Fagiano\*, Mario Milanese\* and Dario Piga\*

\*Dipartimento di Automatica e Informatica, Politecnico di Torino

Abstract - The paper presents the innovative technology of highaltitude wind power generation, indicated as Kitenergy, which exploits the automatic flight of tethered airfoils (e.g., power kites) to extract energy from wind blowing between 200 and 800 m above the ground. The key points of this technology are described and the design of large scale plants is investigated, in order to show that it has the potential to overcome the limits of the actual wind turbines and to provide large quantities of renewable energy, with competitive cost with respect to fossil sources. Such claims are supported by the results obtained so far in the Kitenergy project, undergoing at Politecnico di Torino, Italy, including numerical simulations, prototype experiments, and wind data analyses.