Preface

Dear readers, dear colleagues, friends ☺. More than ten years ago, as a young team (then) under the guidance of our mentors, mostly Assoc. Prof. Karel Chmelík, we gained a unique and unrepeatable opportunity to participate in the development and evolution of technologies for renewable electricity sources, first wind and then photovoltaic power plants, which were among the most dynamically emerging representatives of renewable sources. Under the auspices of the research project of Prof. Hradílek, we had the opportunity to be at the beginning of this development; as part of working trips, we gained valuable experience in the operation of these sources and felt the atmosphere of different locations. However, the possibility to be in contact with people, adventurers and main implementers, can be considered as particularly invaluable. At that time, these people were not guided solely by the prospect of profit but attracted by the opportunity to be pioneers in the given field. They were not afraid to invest their valuable time and risk not only their investments but also their health in promoting the development to the extent which was unusual for the situation in the Czech Republic. Also thanks to these people who enabled us to perform many time-consuming experimental measurements, we have created an extensive database of characteristic values describing the operation of the mentioned representatives of renewable sources, which we further utilized in the optimization of individual components or renewable sources as a whole.

The main goal of our efforts was to find a balance between the requirements of the operators of these sources and requirements of the operators of the network receiving the power from these sources, all with a guaranteed minimum negative environmental impact. Over time, our team thus gained a lot of experience and knowledge, in both theoretical and mainly experimental area which can be identified as particularly beneficial for the given field.

We would like to share with you especially our experience in the area of practical experimental measurements. This is a book that does not aspire to replace professional textbooks or other literature describing the general principles of selected representatives of renewable sources; currently, there are a plethora of such publications in our country and elsewhere in the world. The aim of our efforts is to make available information (hopefully interesting for you) from experimental

measurements of operating conditions, mainly in wind and photovoltaic power plants or their combinations, within long-term measurements and analyses of transient phenomena which accompany the operation of those sources, and thus complement the mosaic of related literature. Individual chapters are arranged chronologically, just as the individual experimental measurements were carried out, i.e. from the analysis of operation of wind power installations for different power and voltage levels, through the analysis of operation of photovoltaic power plants, to their mutual symbiosis in off-grid operation which is addressed in the final part of the book.

To conclude this preface, we would like to thank again Assoc. Prof. Karel Chmelík for his leadership, his active participation in the measurements and the patience with which he shared with us his experience. Furthermore, we would like to thank Prof. Hradílek, within the research project, he provided us, with a technical and financial base for realizing experimental measurements as well as for building unique research testing sites. We thank all operators of renewable sources for access to their facilities where the experimental measurements were carried out. Last but not least, we appreciate our wives for their constant care and endless patience.

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