

## Preface

This book was originally aimed to constitute a section called Mechanical Equipment, in a series of books that in total describe the THE DEVELOPMENT OF HYDRO POWER IN NORWAY. In fact much of the literary work during the preparation of this book, was however, evaluated to be a more suitable presentation of the material for a textbook than for the above mentioned series of books. Therefore it was preferred to edit this book separately with the intention that it may partly serve as a supplementary textbook for students on hydro power machinery.

The subjects being mentioned comprise all main components of a hydro power plant from the upstream end with the basin for water intake to the downstream end of the water flow outlet. Those parts of the plant which are not specifically of the mechanical equipment category, are simply mentioned to inform about their function and position in the system structure.

For the the mechanical equipment it is given basic theory for the hydraulic design of turbines, theory and description of methods for tests of models and prototypes of turbines, theory for the dynamics in water conduits and governing of turbines. Further descriptions are given of the design structure of all actual turbines, valves, governors and auxilliary equipment. In addition a touch on forces transferred to the foundations, causes to damages on the machines, condition control and quality assurance is given.

The preparation of this book has been effected through comparisons and reflections on the material in the references, which are listet at the end of each chapter. However, my colleague Professor Dr.techn. Hermod Brekke, has earlier prepared a manuscript of a book which is containing much of the same subjects as in this case. With allowance from him, I have adopted from his manus quite a lot of the material about the design of the modern turbines and turbine governing. For this important support, I thank Professor Brekke. For the skillful scanning in of the figures, I thank head clerk Rundi Aukan.

Trondheim, December 2001

Arne Kjølle