

Wet-Steam Turbines for Nuclear Power Plants

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OVERVIEW

As traditional fossil fuels are depleted and world demand for power increases, nuclear-generated electricity has a strong future. This volume by a world-renowned scientist should be a must-read for all nuclear power plant personnel. With the widespread deployment of wet-steam turbines at nuclear power plants worldwide, readily available information on operations and maintenance is a critical factor. *Wet-Steam Turbines for Nuclear Power Plants* presents in-depth information essential for plant operators and managers. This book explains in clear, but detailed language, the design process by the world's leading wet-steam turbine manufacturers. It also gives readers comprehensive instruction on the subtleties of operation and maintenance of these complex components.

KEY FEATURES & BENEFITS

- Contains latest wet-steam turbine information from manufacturers
- Comprehensive coverage design features, generic damages, main countermeasures to prevent their failures, and peculiarities of their operating conditions, as well as main directions of refurbishing the aging turbines in service to raise their output, efficiency, reliability, and longevity
- Presents a survey of modern wet-steam turbines,

AUTHOR PROFILE

Dr. Alexander Leyzerovich has more than 40 years of experience in analysis, research, and development for large steam-turbine power units, both serviced and newly designed. He graduated from Moscow Power Engineering Technological University as a mechanical engineer with a major in power steam turbine design before working as a leading specialist at the All-Russian Thermal Engineering Research Institute. There he became chief researcher, focusing on cycling operation of steam-turbine power units, unsteady temperature and thermal-stress states of diagnostics, as well as information support for the operational personnel. For years he also engaged in research and development for wet-steam turbines of nuclear power plants. In 1994, Dr. Leyzerovich relocated to the United States, where he works as a power engineering consultant. He also contributes to professional periodicals, and is the author and coauthor of about 200 published papers in Russian and English, as well as author of several professional books, including the two-volume *Large Power Steam Turbines: Design & Operation*, published by PennWell.

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Typically most of nuclear power plants operates multi-stage condensing steam turbines. In these turbines the high-pressure stage receives steam (this steam is nearly saturated steam $x = 0.995$ point C at the figure) from a steam generator and exhaust it to moisture separator-reheater (point D). The steam must be reheated in order to avoid damages that could be caused to blades of steam turbine by low quality steam. The reheater heats the steam (point D) and then the steam is directed to the low-pressure stage of steam turbine, where expands (point E to F). The exhausted steam is at a pressure Thus nuclear power plant uses Turbine which has HP stage as saturated steam turbine, while IP Turbine steam enters in superheated steam region. 200 views. Ken Helmick. They do use superheated steam. Steam turbines don't like "wet" steam, the little droplets of water in non-superheated steam can damage the turbine blades. So a turbine will always be fed "dry" superheated steam. A typical power plant uses steam at over 70 atmospheres. They have an interesting way to find a leak, you walk the piping, waving a 10 foot wooden wall stud in front of you. When the end of the stud explodes into smoldering splinters, you found your leak. Nuclear Power Stations Steam Machine! " at Paks Nuclear plant, Hungary. How to Get to Cinque Terre & Other Usefu In this post we'll cover not only how to get to Cinque Terre, but also a plethora of other information that will help you plan your visit to 5 of. How to Get to Cinque Terre & Other Useful Info. Photo Gallery: Brown Coal Mining in Germ A giant open-pit mining area near Cologne has already swallowed up 14 villages, but one local police officer is fighting to protect his home. He has managed to bring his case before Germany's highest court, and its ruling could have major implic... Find this Pin and more on Engine,turbines. by markshontz. Tags. Turbine Hall. Steam Turbine. Aviation Technology. Battersea Power Station. Tags: Gas Turbine Gas Turbine Engineering Handbook Gas Turbine Handbook Pelton Turbine Renewable Energy Residential Wind Turbine Steam Turbine Steam Turbine Handbook Pdf Turbine Water Turbine Waterlily Turbine Wind Energy Wind Generator Wind Power Wind Turbine Wind Turbine Books. All Tags. Wet Steam Turbines for Nuclear Power Plants By Alexander S Leyzerovich is available for free download in PDF format. Related PDF Books. Microturbines by Claire Soares. Small Wind Turbines for Electricity and Irrigation Design and Construction by Mario Alejandro Rosato. Process Steam Systems a Practical Guide Steam turbines for modern fossil-fuel power plants/Alexander S. Leyzerovich ©2008 by The Fairmont Press. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the publisher. With regard to steam turbines of CC units and wet-steam turbines of nuclear power plants, these gures may rise up to 80-90%. A further growth of electric power consumption requires and will require constructing new power plants, and steam-turbine units will continue to make a very great and highly significant contribution to overall power generation everywhere.

A nuclear power plant (sometimes abbreviated as NPP) is a thermal power station in which the heat source is a nuclear reactor. As is typical of thermal power stations, heat is used to generate steam that drives a steam turbine connected to a generator that produces electricity. As of 2018, the International Atomic Energy Agency reported there were 450 nuclear power reactors in operation in 30 countries around the world. Wet-Steam Turbines for Nuclear Power Plants by Alexander S. Leyzerovich. Contents: 1. The Nuclear Power Industry at the Turn of the 21st Century. 2. The Thermal Process in Wet-Steam Turbines. 3. Design. 4. Operation. 5. Refurbishment. Preface: The first kilowatt-hours of electricity from nuclear energy were produced on December 20, 1951, in the United States by a steam turbine generator fed with steam from Experimental Breeder Reactor-I (EBR-I). The turbine had a rated output of 200 kW and initial steam conditions of 2.8 MPa and 220°C (405 psi, 429°F). Inside a Nuclear Power Plant. Primary, Tertiary Loops. Contaminated steam goes to steam turbine - special gland sealing system - Turbine island needs some containment (concrete shielding) + specific material choices. The Boiling Water Reactor (BWR). p.10. What is specific to Nuclear Power Plants? Much larger steam volume flow. 80. Steam Turbine Specifications for Nuclear Power Plants. No. of casings. Four casings (HP turbine - LP turbine - 3). This site (power.mhi.com) uses cookies in order to improve your experience and to provide content of your interest upon revisiting the site. For more information about the use of cookies on this site, please review our cookie policy in our Terms of Use. And please confirm that you agree to use of cookies by clicking Yes. Terms of Use.