# Table of Contents

**LECTURES**

**VIBRATION REDUCTION OF LARGE STEAM TURBINE GENERATOR THROUGH BEARING ANALYSIS/MODIFICATION** .................................................. 1  
  Joseph W. Spencer Jr. and Don Osborne

**SUBTRACTING RESIDUAL UNBALANCE FOR IMPROVED TEST STAND VIBRATION CORRELATION** ................................. 7  
  John C. Nicholas, Stephen L. Edney, John A. Kocur, and Jerry E Hustak

**FIELD TESTING OF GAS TURBINE DRIVEN CENTRIFUGAL COMPRESSOR PACKAGES—TEST PROCEDURES AND MEASUREMENT UNCERTAINTIES** ................................. 19  
  Rainer Kutz and Klaus Brun

**CONFIRMING CENTRIFUGAL COMPRESSOR AERODYNAMIC PERFORMANCE USING LIMITED TEST DATA COMBINED WITH COMPUTATIONAL FLUID DYNAMIC TECHNIQUES** ................................. 35  
  Shreekant Shah and John C. Bartos

**RERATE OF CENTRIFUGAL PROCESS COMPRESSORS—WIDER IMPELLERS OR HIGHER SPEED OR SUCTION SIDE BOOSTING?** ................................. 43  
  Klaus Lüdtke

**DESIGN AND RETROFIT OF A LOW SOLIDITY DIFFUSER FOR A PIPELINE CENTRIFUGAL GAS COMPRESSOR APPLICATION** ................................. 57  
  Michael B. Flathers

**DISCOVERING, THE HARD WAY, HOW A HIGH PERFORMANCE COUPLING INFLUENCED THE CRITICAL SPEEDS AND BEARING LOADING OF AN OVERHUNG RADIAL COMPRESSOR—A CASE HISTORY** ................................. 67  
  Joseph P. Corcoran, Harvey Rea, Guill A. Cornejo, and Martin L. Leonhard

**FLOW-INDUCED TURBOCOMPRESSOR AND PIPING NOISE AND VIBRATION PROBLEMS—IDENTIFICATION, DIAGNOSIS, AND SOLUTION** ................................. 79  
  David E. Jungbauer and Linda L. Eckhardt

**STEAM TURBINE RISK ASSESSMENT—A TOOL TO ASSIST IN OPTIMIZING INSPECTION AND OVERHAULS OF INDUSTRIAL STEAM TURBINES** ................................. 87  
  Timothy J. Christ, Michael J. Drosjack, and G. Mark Tanner

**TURBINE REMANUFACTURE—ONE OPTION FOR RELIABILITY AND EFFICIENCY IMPROVEMENT** ................................. 95  
  David A. Johns, David Rasmussen, and James Beverly

**AN ASSESSMENT OF THE FORCES ACTING UPON A CENTRIFUGAL IMPELLER USING FULL LOAD, FULL PRESSURE HYDROCARBON TESTING** ................................. 111  
  Cyril Borel, James M. Sorokes, Thomas McMahon, and Edward Abraham

**COST EFFECTIVE RE-ENGINEERING OF A PROPYLENE COMPRESSOR STRING** ................................. 123  
  John F. Vanderhoff and John R. Dugas, Jr.

**UNDERSTANDING AND PREVENTING STEAM TURBINE OVERSPEEDS** ................................. 129  

**STRESS EVALUATION IN HIGH SPEED, ROTATING MACHINERY WITH THE L CR ULTRASONIC TECHNIQUE** ................................. 143  
  Don E. Bray and Martin Dietrich

**APPLICATION OF DRY GAS SEALS IN SPECIAL PURPOSE STEAM TURBINES** ................................. 151  
  Theodore E. Bond, Mark Pospisil, and E.V. Wilkinson
SPECIAL PAPER

INSTALLATION TOOLS FOR HYDRAULICALLY FITTED COUPLING HUBS—PRECAUTIONS AND DESIGN REQUIREMENTS ......................................................... 159
  C.B. Gibbons and A. Nigel Hearne

TUTORIALS

HIGH SPEED ELECTRIC DRIVE APPLICATIONS—AN OVERVIEW ....................................................... 167
  John C. Rama and Miles Griggs

RISK BASED MAINTENANCE OF TURBOMACHINERY ................................................................. 177
  Anthony J. Smalley and David A. Mauney

RELIABILITY FOCUSED MAINTENANCE SYSTEM ................................................................. 189
  Bonz Hart and Paul Lane

EXPERT SYSTEMS PROVIDE SUPPORT FOR A PROACTIVE MACHINERY MANAGEMENT METHODOLOGY ........................................ 195
  Ronald Bosmans

ANNULAR GAS SEALS AND ROTORDYNAMICS OF COMPRESSORS AND TURBINES .................... 201
  Dara W. Childs and John M. Vance

DISCUSSION GROUPS .......................................................... 221

SHORT COURSES .......................................................... 243

ADVISORY COMMITTEE .......................................................... 255

PROFESSIONAL STAFF .......................................................... 261

TURBOMACHINERY LABORATORY .......................................................... 265