

Turbomachinery Solutions

(A Vulcan Management Business)

Group of Experts with proven credentials for all your
Turbomachinery business needs

A comprehensive consulting service business for Turbomachinery, comprising of best of the talents available for technology, design, development, prototyping, trouble shooting accompanied by management & operations experts, and marketing and sales professionals

The consultants in our team have made a **major impact in the Turbo machinery industry over the past more than three decades**. They have participated in different and very important roles at different locations for **successful design and development of more than 50 new Turbomachinery models and design and development of more than 2500 Turbo machinery components** including the patented revolutionary bearings, rotor assemblies and other important parts of a Turbomachinery. Our team members have been involved in **successful shipment of more than a total of 20,000 turbomachines** for successful installation in the field.

What do we do?

We provide a complete suite of services through our pool of consultants to set up a completely new Turbo machinery business as well as provide services for various parts of the business.

Our services for Turbo machinery:

Design and Engineering Services

- Aerodynamics performance development and enhancement
- Rotor Dynamics
- Complete machine Design
- Technology Development (Machine as well as component)
- Engineering
- Prototyping
- Trouble shooting at all levels (While designing, developing, manufacturing, testing of equipment or Field problems)

Sales/Marketing/Operations/Manufacturing and Strategy building

- Market Research and Analysis
- Competition Analysis
- Portfolio planning
- Strategy and Planning

- Sourcing strategy and services
- Manufacturing and Operations layout and streamlining

Resources

Our pool of resources comprises of experts from every field of knowledge in Turbomachinery. We have a combined experience of more than 300 years in Turbomachinery.



Mahesh Joshi

Mahesh is a global Turbomachinery executive with vast experience in **managing and growing global Turbomachinery business for more than three decades.** He has managed businesses in developed and developing countries. His skill sets include working across multiple geographies and cultures to build enthusiastic and energetic high performance teams. He has successfully lead teams for business transformation with accelerated growth, enhanced profit margin, improved productivity, and cash flow. His areas of expertise are

enterprise value enhancement, startup and turnaround, change management, global operations, continuous improvement, acquisition & integration, and competitive strategies for market share gain. **He has track record of successful global expansion of businesses with entry into countries such as China, India, Korea, Russia, Brazil, and the Middle East for Turbomachinery.** He held leadership roles in large multinational companies: **Ingersoll Rand and Cameron.** His experience includes **General Manager for Centrifugal Compressors at Ingersoll Rand, and President of Centrifugal Compression at Cameron.** He was also the **Group President Energy** at Circor International.

He holds a Master Degree in International Strategy and Diplomacy from **London School of Economics.** He is a graduate of The Advanced Management Program at **Harvard Business School,** Oxford Advanced Management and Leadership Program at University of **Oxford,** **MBA** from Murray State University, and Bachelor of Science in **Mechanical Engineering** from Delhi Technological University in India.

Publication: Book under publication at Oxford University Press

“Global Business”

Research, Development, Analytics, Trouble shooting and Design Engineering



Wen Jeng Chen, Ph.D., P.E., Fellow ASME

Dr. Chen is the **most renowned and respected design expert in the field of Turbomachinery**. He has led design and development of Turbomachinery technology for more than two decades. **He has made significant contributions in the area of rotating machinery as a practical industrial engineer and outstanding researcher**. His achievements have been both analytical and design-oriented and have spanned a broad spectrum of topics in the field of rotating machinery. He has published a number of journal papers and **written a book in rotor dynamics and bearing design**. Many **universities use his book as a textbook in graduate study**. His most significant accomplishment has been the **development of two outstanding finite element computer codes** which have revolutionized the process of both rotor dynamics and bearing analysis and made it possible for engineers to solve complex rotor dynamics problems. These programs are widely used by government agencies (**FAA, NASA, US Air Force, and US Navy**), universities, and various industries (**Boeing, GE, GM, Honeywell, Northrop Grumman, Siemens, Concepts NREC, etc.**). He

also holds several patents in bearing design. He received IR President's Award in recognition for his outstanding engineering achievement and significant contribution to the growth and success of the company while worked with **Ingersoll-Rand Company.** He has consulted with **NASA, GE, Northrop Grumman, Honeywell, Borg Warner, Ramgen Power Systems,** and many companies in rotor dynamics, bearing analysis and design, and vibration problems. He is constantly giving short courses in rotor dynamics, bearing analysis, and design. He is a **Fellow of ASME** and has served as a technical reviewer for several ASME journals. **He received the H. H. Jeffcott Award for outstanding ASME technical paper on rotating machinery. He is listed in Who's Who in Science and Engineering, 2000/2001.**

Books Published by Dr Wen Jeng Chen are

(1) Practical Rotordynamics and Fluid Film Bearing Design

ISBN-13: 978-1490762296

(2) Introduction to Dynamics of Rotor-Bearing Systems

ISBN-13: 978-1412051903

Dr Chen is supported by group of experts

Robert King

Mr. King has worked in the centrifugal compressor industry for over 30 years.

He has successfully managed the development of many **best-seller compressors for Ingersoll-Rand Company**. He held various positions while working for IR and has extensive experience in **compressor conceptual establishment, detailed component design and manufacturing, complete assembly, prototype testing, failure analysis, and project management**. His contribution to the success of Ingersoll-Rand Company was recognized with many awards from management including IR President's Award for his outstanding engineering achievement and product development. He has several patents in compressor component design. He is well known for his excellent skill in project management and product development.

Ron Haugen, Ph.D., P.E.

Dr. Haugen has over 30 years experience in compressor design and manufacturing. **He is the father of successful Centrifugal compressor range developed at Ingersoll Rand. He was the head of Engineering, Worldwide, at Ingersoll-Rand Company, Compressor Division**. He was responsible for all the engineering activities ranging from air end and package development, high-speed gearing, bearings and seals, aerodynamics, components, controls,

contract, drafting, testing, and reliability. **He holds numerous patents in all fields of compressor design from aero and mechanical components to control logics and surge protection.** He has developed many extremely **valuable design tools** in all aspects of compressor design and performance prediction. These tools have accelerated the product development and shortened the design cycle in many IR compressors. **Dr. Haugen was the architect of the popular Centac© II compressors and is well respected in the compressor industry.** He received the IR Chairman's Leadership Award for Excellence in Product Design.

Frank Olsofka

Mr. Olsofka has over 30 years experience in developing centrifugal compressors. **He was Manager of Design Engineering at Ingersoll-Rand Company, Compressor Division and managed design teams that were responsible for developing new Centac© centrifugal compressors for worldwide manufacture and sales.** He was recognized with the IR Chairman's Leadership Award for Excellence in Product Design. He designed all the aero components for new Centac© products. He created design tools that enhanced the performance of older designs for aftermarket products,

reoccurring revenue that accounted for 25% of Group operating income annually.

Keith Bugar

Mr. Bugar worked for **Ingersoll-Rand Company over 30 years from application engineer to senior aero engineer**. He had aero performance responsibility over all the large frame size (over 1000 hp) compressors, special engineered products, and API applications. Besides the development assignment, **he also supported manufacturing, production, field service analysis, re-rate, and retrofits.**

Pat Powers

Mr. Powers was the **Lab Manager at Ingersoll Rand for over 25 years responsible for all the compressor prototype assembly and testing**. He has **built and tested almost all Centac® prototype compressors for the most popular and large selling range of compressors**. He was also involved in the **compressor component testing for development, manufacturing, and aftermarket departments, ranging from aerodynamics, impellers, diffusers, bearings, seals, valves, control, and instruments**. He also performed data

collection and reduction during the compressor testing, both aerodynamics and mechanical tests.

J. P. Zhang, Ph.D., P.E.

Dr. Zhang has worked on **turbomachinery mechanical analysis and design for over 18 years including many years with NREC**. He has extensive experience in finite element analysis using ANSYS and ADINA, also in **geometric modelling using Pro-E and Solid Works**. He has worked on all aspects of the mechanical components analysis and design including **modal analysis, fracture mechanics, fatigue life analysis, thermal induced stress, containment analysis, and non-linear transient analysis**. He has worked on many difficult engineering problems on the compressors and turbines. He has successfully **solved many mechanical problems and machine failures** through his innovative designs based on his strong engineering capability.



Edgar J. Gunter, Jr., Ph.D., Fellow ASME

Dr. Gunter has worked in the **field of vibrations of rotor machinery and fluid bearings for over 40 years and written over 150 technical papers and reports**

on various aspects of the dynamics of rotating machinery, fluid film bearings and balancing. Dr. Gunter is now a **professor emeritus, after teaching for 34** years in the Department of Mechanical, Aerospace and Nuclear Engineering at the University of Virginia. **He has worked with industry and government on various rotor dynamic and vibration problems.** He also consulted with NASA and participated in hands-on work on the space shuttle program in its early days. NASA engineers utilize DyRoBeS software extensively, **and Dr. Gunter has presented numerous on-site training courses at NASA on the use of both the rotor dynamics and bearing components of the software.**

Marketing, Sales, Customer Relations, and Aftermarket Services:



Eric Wu

Eric Wu is a **Turbomachinery veteran with vast experience in developing and managing markets** for turbomachinery products. He has intimate knowledge of Turbomachinery markets , products and customers. He has more than two decades of experience in chemical/petrochemical, mechanical, energy, and high technology industries. Eric has worked in various disciplines including

engineering, sales, marketing, operations, business development, and M&A.

He started his career with SINOPEC Shanghai Engineering Co. as the Process Engineer. His experience includes Sales Specialist and Product Manager, Asia Pacific at **Atlas Copco**. Business Unit Manager for Asia Pacific at **Ingersoll Rand**, and Marketing Director for Asia Pacific and Middle East for **Cameron**

Centrifugal Compression Business. In his most recent assignment, he was the Managing Director of China for Areesys – a high technology company founded in Silicon Valley. He was the key member of the start-up team. Eric holds a Bachelor of Thermal Energy Engineering from Tongji University, China and received the MBA degree from China Europe International Business School.

Operations, Manufacturing, and Sourcing



Steve Tomlinson

Steve Tomlinson has four decades of technical and management experience in all aspects of manufacturing operations. He has held significant executive positions in all functions of operations including shop operations, manufacturing engineering, supply chain, logistics, quality / health and safety, business process

improvement and multi plant global operations in a variety of corporate structures at firms such as GE, General Signal, Cameron International, and Vetco Gray. This experience has been gained in industries as varied as defense systems, rail control / braking systems, hydraulics, power generation, hybrid integrated circuits, diesel engine manufacturing, power generation and oil and gas flow control.

Mr. Tomlinson's' Turbomachinery experience comes from over 10 years in various positions with GE's Steam Turbine (ST) Manufacturing business in Schenectady NY and Six years with Turbomachinery Business in his profile of companies at Cameron International. During his time at GE, he served as Company Manager of the Components group, responsible for babbitted tilt pads bearings, stop / control valves, spill strips / packing rings, bolting and rotor components. He was also Quality manager for Steam Turbine as well as leading the ST Manufacturing Engineering group with a budget of over \$350 M USD. At Cameron, he led the company operations as corporate Vice President for Operations and Sourcing for all the manufacturing locations. His Educational back ground includes, AAS Mechanical Technology - SUNY Farmingdale Ag & Tech, Bachelor of Science Industrial Technology - SUNY Buffalo State College, Buffalo NY and MBA -Rensselaer Polytechnic Institute, Troy NY. Some of his professional affiliations are GE certified Six Sigma Master Black Belt, APICS

certified Supply Chain Professional, Member APICS, and former ISO auditor
(Lloyds)

Some of the companies our consultants have interacted at various levels and worked with for developing technology, products, business development, management and troubleshooting are:

NASA

Honeywell

Boeing

Siemens

GE

Ingersoll Rand

Atlas Copco

Cameron

MAN Diesel and Turbo

SBW

SANY

GM

Northrop Grumman

Concepts NREC

Northrop Grumman

Borg Warner

Ramgen Power Systems