

WASEDA  
University



一般社団法人 ターボ機械協会  
Turbomachinery Society of Japan

# *Texas A&M University* *Turbomachinery Laboratory (TEES)* によるワークショップ形式のセミナー



## 【開催日時・場所】

日時： 2026年2月26日（木） - 27日（金）

場所： 早稲田大学・西早稲田キャンパス63号館 2階 201、202教室

## 【主催】

- Texas A&M Engineering Experiment Station (TEES)
- Turbomachinery Laboratory, Texas A&M University
- ターボ機械協会

## 【登録費用】（消費税込み）

i. 一般	132,000 円
ii. 教育機関・国立研究機関	44,000 円
iii. 学生	6,600 円
iv. スポンサー登録	110,000 円

※ 2日間の受講、講習資料、ランチ、レセプション、コーヒーを含む

（学生の方でレセプションに参加の方は別途7,700円（税込み）を頂きます）

※ スポンサー登録いただけするとポスター・カタログ・パンフレット等を展示させていただきます。

ポスター展示コーナーパネル説明員1名の方のセミナー聴講は無料です。

また、他1名の方のセミナー聴講料を44,000 円（税込み）とさせていただきます。

## 【対象者】

このワークショップは、遠心圧縮機、軸流圧縮機、ガスタービン、蒸気タービンなどのターボ機械に関するより詳細かつ実践的な知識を習得したいエンジニアを対象としています。ターボ機械の空気力学、熱力学、ロータダイナミクスの理論的基礎を詳細にカバーするとともに、インペラやブレードの設計、シール、ベアリングなどの機械的側面といった重要なトピックにも触れます。また、プロセス制御、機械制御、サーボ制御についても詳しく説明します。さらに、超臨界CO<sub>2</sub>アプリケーションに重点を置いたターボ機械のアプリケーションについても説明します。（初心者から熟練者まで幅広く参加可能）

## 【参加メリット】

- ・ターボ機械の空力・熱力学・回転機械の包括的理
- ・超臨界 CO<sub>2</sub>、水素、低温流れなど最新アプリケーションへの知見
- ・高度な設計実務に直結する講義（ロータダイナミクス、シール、ベアリング等）
- ・国内外の研究者・企業技術者との交流機会
- ・Texas A&M Turbomachinery Laboratory の教育プログラムを日本で受講できる唯一の機会

# 【プログラム概要】

Day 1: Turbo Track (201教室) 9:00~17:35

主に ターボ機械の基礎～応用 を網羅するセッション

Day 1: Hydro Track (202教室) 8:30~17:55

主に ポンプ・ターボポンプ・キャビテーション・低温流れ

Day 1: レセプション18:30~21:00

Day 2: Combined Track (201教室) 8:30~17:45

主に ターボ機械共通の応用課題を深掘り

詳細は次ページ以降をご覧ください。

# 【講師の皆様のご紹介】

## TURBOMACHINERY SEMINAR TURBO TRACK INSTRUCTORS



Dr. Rainer Kurz is the Principal of RKSenergy LLC and an Adjunct Professor at San Diego State University. He retired recently as the Manager, Gas Compressor Engineering, Solar Turbines Incorporated, with responsibilities for the design, research and development of Solar's Centrifugal Gas Compressors.



Dr. Klaus Brun is a globally recognized expert in the field of energy systems. He has worked with several US government agencies, the US congress, and many major international companies to provide strategic guidance and expertise in the areas of energy infrastructure, technology, and product development. Dr Brun is currently the Global Director of Research & Development at Ebara-Elliott Energy.



Dr. Karl Wygant is a professional in the field of advanced turbomachinery technology, he currently serves as the Senior Manager of Advanced Technology Programs at Elliott Group. In this role he leads hydrogen and carbon dioxide compressor development initiatives.



## Time Schedule

**0900 – Welcome and Introduction**

**0915 – Overview of Machinery**

What is a Turbomachine

Gas Turbines

Steam Turbines and Expanders

Centrifugal and Axial Gas Compressors

Components

**1100 – Break**

**1110 – Thermodynamics of Gas Compression**

Real and Ideal gases

Pressure-Temperature and Volume

Enthalpy and Entropy

Mollier Diagram

Gas Mixtures

Gas Phase, Dense Phase, and Supercritical Compression

**1210 – Lunch**

**1250 – Exhibition**

**1320 – Thermodynamics of Heat Engines**

Brayton Cycle

Bottoming Cycles

Component interaction

Sample Calculation

**1415 – Turbomachinery Aerodynamics**

Eulers Law

Bernoullie's Law

Axial Turbomachinery

Centrifugal Turbomachinery

Component Interaction

**1545 – Break**

**1555 – Rotordynamics for Turbomachinery**

Basics

Lateral Rotordynamic Analysis

Bearing Types and Limits

Design for API Applications

Measurement

Case Studies

**1735 – Q&A and Wrap-up**

**1815 – Adjourn**

# DAY 1 - TURBO TRACK



## Time Schedule

**0830 – Welcome and Intro**

**0845 – Internal flows and performance of Turbopump**

Hydrodynamics of Pump

Internal Flow and Performance

Hydro Design

**1010 – Break**

**1020 Improvement of Pump Performance**

Improvement of Efficiency

Control of Total Head

Improvement of Positive Slope of Q-H

**1120 – improvement of Reliability**

Flow Instability

Countermeasure of Flow Instability

Flow-induced vibration

Improvement of Fluid Exciting Force

**1220 – Lunch**

**1250 – Exhibition**

**1320 – Cavitation of Pump**

Cavitation Performance of Pump

Prediction of cavitation performance

Countermeasure of cavitation performance

Cavitation erosion

**1520 – Break**

**1530 – Cryogenic Flow Pump**

Characteristics of Cryogenic Flow

Test Facility

Measurement of Cryogenic Flow

Pump Performance

Thermal Effect of Cavitation

**1700 – Q&A and Wrap-up**

**1740 – Adjourn**

# DAY 1 - HYDRO TRACK

Dr. Andrew Sanderson (Sulzer)

"Nick is a professional engineer with over 30 years in the industry. As a Chartered Engineer and Fellow of the IMechE, Nick has held Engineering Manager positions in various multinational Pump and Compressor manufacturers over the years, as well as working as a design engineer, field service engineer and even University lecturer. In the past seven years in his current role of Senior Technical Trainer for Sulzer Pumps, Nick regularly travels across Europe and the Middle East delivering bespoke pump training to pump operators, maintenance staff and system engineers. Whether the training is generic, site specific or product specific, Nick delivers the essential material using animated interactive presentations which are derived from original pump documentation and backed up with a wealth of personal experience."



## Time Schedule

### **0830 – Welcome and Recap**

### **0845 – Impeller and Blade Design**

Fundamentals

Static Stress, Low Cycle Fatigue, and Structural Limits

Campbell and Interference (SAFE) Diagrams

Mistuning

Manufacturing Considerations

Fatigue Analysis and Goodman Diagrams

### **0930 – Turbomachinery Seals**

Annular Seals

Labyrinth Seals

Damper Seals

Brush Seals

Dry Gas Seals

### **1000 – Control Concepts for Turbomachinery Trains**

Process Control

Surge Control

Control Elements

### **1100 – Break**

### **1120 – Turbomachinery Select Applications**

Oil & Gas

Power Generation

### **1230 – Lunch & Exhibition**

### **1345 – Supercritical CO<sub>2</sub> Applications**

Introduction to sCO<sub>2</sub> Power Cycles

sCO<sub>2</sub> Turbomachinery Characteristics

Rotordynamics

Near-Dome Operation

Pressure/Thermal Containment

Types of Turbomachinery

### **1545 – Break**

### **1600 – Fluid Film Bearings for Turbomachinery**

ElastoHydrodynamics

Thermal Influences

Types (Fixed Geometry and Tilting Pad Journal Bearings)

Static and Dynamic Coefficients

### **1700 – Q&A and Wrap-up**

### **1745 – Adjourn**





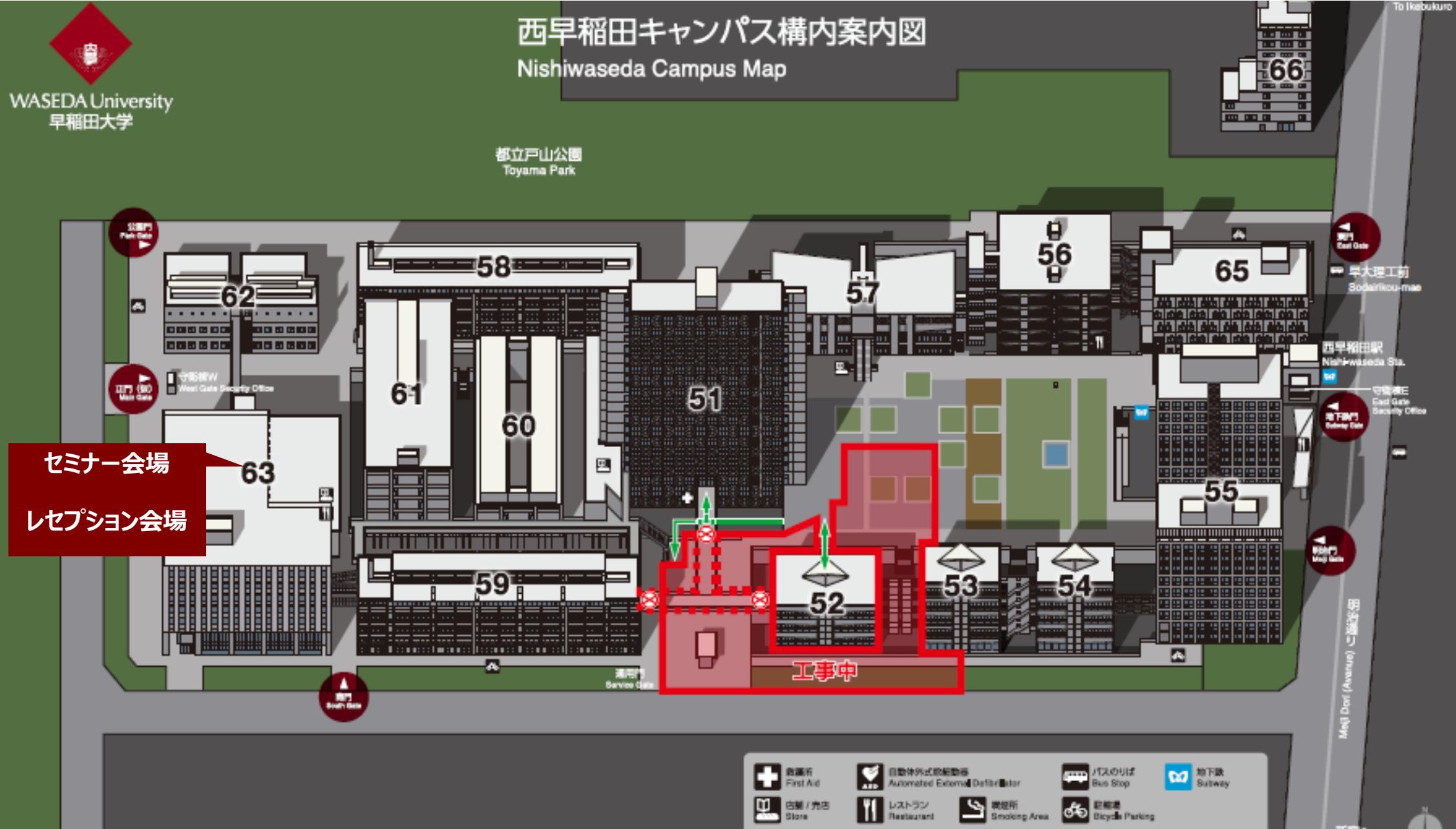
WASEDA University  
早稲田大学

# 西早稲田キャンパス構内案内図

## Nishiwaseda Campus Map

To Ikebukuro

都立戸山公園  
Toyama Park





WASEDA  
University

# SEMINAR VENUE

早稲田大学西早稲田キャンパス63号館

