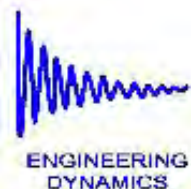




45<sup>TH</sup> **TURBOMACHINERY** & 32<sup>ND</sup> **PUMP SYMPOSIA**  
HOUSTON, TEXAS | SEPTEMBER 12 – 15, 2016  
GEORGE R. BROWN CONVENTION CENTER

# Reciprocating Compressors 101: The User's perspective



# Speaker Bios:



**Robert Eisenmann, Jr.** is a Machinery Advisor at BP Refining and Logistics Technology in Houston, Texas. He provides technical advice to the BP global refining portfolio to support business delivery, company strategy, industry direction, and technical assurance to support business decisions. He also promotes technology solutions and development and implementation of best practices across the BP refineries. He is currently the API SOME Chairman, API 618 Chairman, API 692 Chairman and serves as a SME for BP's Engineering Technical Practices. Bob has over 20 years of experience in the industry. Bob graduated from Texas A&M University at Galveston in 1992 with a B.S. in Marine Engineering. He joined the TAC September, 2012.

# Speaker Bios:



**Kenneth E. Atkins, P.E.** is a Senior Staff Engineer at Engineering Dynamics, Incorporated (EDI). He has over 30 years of experience with rotating machinery and structural dynamics. Prior to co-founding EDI in 1982, he was with Southwest Research Institute and Exxon Chemical Americas. Ken has authored several technical papers on machinery dynamics. He has lectured frequently at the Turbomachinery and Pump Symposia, including both a tutorial and a short course. He also presents various topics at EDI's annual seminar on rotating and reciprocating machinery dynamics. Mr. Atkins received a B.S. Degree in Engineering Science from Trinity University in 1978. He is a member of ASME, several API committees, and is a Registered Professional Engineer in the State of Texas. He joined the TAC September, 2012.

# Speaker Bios:



**Benjamin A. White, P.E.**, is currently the Manager for the Fluid Machinery Systems Section at Southwest Research Institute (SwRI) in San Antonio, TX. He is a 1995 graduate of Texas A&M University with a B.S. degree in Mechanical Engineering. He has over 19 years of experience in the fields of mechanical vibrations, compressor and piping system design, finite element analysis, thermal piping stress and acoustics.

# Speaker Bios:



**Bruce McCain, P.E.** is an Engineering Consultant at Oxy Oil and Gas Corporation. He has 25+ years experience as an end user, primarily in the upstream sector, providing technical support for rotating, reciprocating, and stationary equipment both as a plant engineer and in a staff functional role. He has contributed to various trade publications and industry conferences. Bruce is a licensed Professional Engineer in Texas, a Certified API 510 Pressure Vessel Inspector, and is on the API Std 688 (Pulsation and Vibration Control in Positive Displacement Machinery Systems) Taskforce. Bruce is also a member of the Turbo Advisory Committee for the Turbomachinery Symposium. He has a BSME from Texas Tech University.

# Course Outline

- I. Introduction and Machine Basics (Bob)
- II. Technical Details (Ken)
- III. Pulsation and Vibration (Ben)
- IV. Summary (Bruce)

This course will present the basic concepts of reciprocating compressor applications from a user's perspective. There is an introductory section on application basics (why recips?), including selection criteria and industry standards (API 618, etc.). Compressor components, the basic compression cycle, capacity control, pistons, rings, rods and lubrication essentials are covered.

Technical details including PV diagrams, rod loads, rod reversal, torsional vibration as well as skid and foundation considerations are discussed. Some basic information on pulsation and vibration control is presented, including a discussion of the various API design approaches. Vibration and pulsation measurements are also included. The course is then summarized with basic "must have" design rules of thumb, life cycle considerations, layout and maintenance considerations, and several case histories to illustrate these concepts.