

## Discussion Group T10: Hot-Gas Expanders

### Leaders:

- Lil Kassie (BP)
- Bob Kranz (Valero)
- Justin Kassie (BP)
- George Seamon (Dresser-Rand)
- Don Shafer (Rotating Machinery Service)
- Dave Linden (D.H. Linden Associates, Inc.)

### Suggested Topics:

- What reliability improvements have been made using new expander technology?
- Separators – who should be involved with sizing and selecting 3<sup>rd</sup> stage separators? Who has the expertise? Are there standards/guidelines to follow?
- Erosion – what has been done in the industry to minimize erosion? If erosion is not the problem, what should determine the life of expander blades?
- Deposition – cause/prevention/permanent solutions
- What are the downsides to nut blasting?
- Flow path cleaning – best practices, available methods, how often, injection port location, abrasive types and shot size
- Design tools and CFD modeling
- Catalyst buildup and plugging has been a typical problem with hot seals. Has anyone designed or upgraded a seal that stays clean and works effectively?
- View ports – valve issues and solutions, keeping ports clean; air and nitrogen purge. Is a single lens safe enough?
- Bearing housing oil leaks. Are labyrinth seals good enough? Does buffer or purge really help? What other types of sealing are OEMs recommending/installing?
- Rerates – What are the drivers/maximize power/improved reliability, and how?
- Cooling steam
- Open discussion on what expander issues are most frustrating; Q&A with attendees
- Improving expander reliability – typical issues and end-user options
- Performance monitoring – what works best?
- Expander overspeed trip testing – electronic/mechanical
- Isokinetic testing; Should the OEM have some influence in designing the duct for testing?
- Case and duct leaks
- Do accelerometers add to understanding rotor behavior?
- Performance trending. Can tip rubs be predicted via efficiency/swallowing capacity?
- Bearings – options/directed lube versus flooded versus oil leaks
- Creep life – how to determine