CST Training Course
«Pulsations and Vibrations of Reciprocating Compressors»
Florence, November 3-4, 2016
WHO SHOULD ATTEND

The Course is based on the multi-decade experience of CST engineers in the design, operation, maintenance and troubleshooting of reciprocating compressors and is intended to equip customers with the technical background to make better decisions. The intended audience includes the following engineers:

- Operation and Maintenance engineers from End Users
- Rotating equipment engineers from EPC Contractors
- Piping engineers from Packagers and System Integrators
- Commissioning & Startup engineers of OEM and Service Providers
COURSE TOPICS

Day 1

1. Introduction to reciprocating compressors
2. Basic design criteria and thermodynamics
   • basic properties of fluids
   • main compressor components
   • thermodynamic cycle
   • forces acting on crank-mechanism
   • static and dynamics loads
3. Pressure pulsations
   • acoustic wave theory
   • generated pulsations and propagation of waves
   • acoustic resonance
   • influence of pulsation on compressor valves
4. Effect of pulsations and suppression methods:
   • shaking forces
   • pulsation suppressors
   • volume bottle sizing
   • API 618 approaches and API 688
   • acoustical analysis
   • CST acoustical analysis software

Day 2

5. Reciprocating Compressor Vibrations
   • vibrations and mass spring damper model
   • max allowable shaking forces
   • piping mechanical characteristics (API 688)
   • acoustical and mechanical analysis
   • mechanical resonance
   • allowable vibration guidelines
   • vibration measurement
6. Pipe supports
   • design
   • positioning
7. Small bore piping
8. Hypercompressor plant guidelines
9. Case studies and troubleshooting
   • Off-shore gas lift compressor welding ruptures
   • HDPE plant separator flange failures
   • LDPE hypercompressor vibration issues
   • Vertical compressor acoustic resonance
The course will take place in Florence on **November 3rd-4th, 2016**.

Lessons begin at 9.00 and finish at 16.00, with two coffee and one lunch break.

For the evening of November 3rd we scheduled a dinner in a characteristic Italian restaurant (**included in the registration fee**).

Total cost including two lunches and 1st day dinner: **1,300 €/person**

For more information on CST's expertise services, please visit our website [www.cstfirenze.com](http://www.cstfirenze.com) or contact via email/phone Ms Lucia Mattesini
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