**Reciprocating Compressor Instrumentation and Condition Monitoring**

**Components and Nomenclature**

- **Crosshead assembly nomenclature**
  - Crosshead
  - Crosshead pin bearing
  - Crosshead pin
  - Crosshead pin bushing
  - Connecting rod
  - Connecting rod bushing

**Multi-Event Wheel**

- **Benefits**
  - Detection of impact-type events such as loose running gear components, liquid ingestion into the cylinder, or excessive clearance in the wrist pin bushing.

**Piston Rod Break**

- **Inter-chamber leak (usually piston rings)**
  - Indicated pressure curve
  - Theoretical pressure curve

**Rod Load Monitoring**

- **Capacity Control Stepless Unloader**
  - 100% load
  - 76% load
  - 50% load
  - 25% load

**Leak**

- **Leak to low pressure side (suction valves or pressure packing leak, if CE chamber)**
  - Pressure versus time
  - Pressure versus temperature

**Condition Monitoring**

- **Waveform types**
  - Crosshead acceleration – six hardware bands
  - Cylinder pressure transducer
  - Cylinder acceleration overload with dynamic pressures

**Instrumentation Layout**

- **S1**
  - Cylinder
  - Cylinder valve
  - Indicated pressure curve
  - Theoretical pressure curve

**Cylinder Pressure Installation Details**

- **Cylinder pressure transducer**
  - Head-end theoretical pressure curve
  - Crank-end theoretical pressure curve

**Scenario:**

- For more information visit bntechsupport.com or call +1 775 215 1818

---

**Notes:**

- Our machinery diagnostic engineers help you reach your safety and efficiency goals, providing critical insights to reduce operating and maintenance costs.

---

**Image:**

- Crosshead-mounted accelerometers can detect machinery problems due to impact-type events such as loose running gear components, liquid ingestion into the cylinder, or excessive clearance in the wrist pin bushing.

---

**Text:**

- The single most effective way of determining the overall health of a reciprocating gas compressor is by examining the indicated pressure curve.

---

**Additional Information:**

- Maximum allowable continuous combined load (MCCOL)
  - Minimum allowable continuous combined load (MACCL)
- Maximum allowable continuous combined load (MACCL)
  - Combined (inertia and gas) rod loads calculated at the crosshead provide information about the lubrication condition of the crosshead pin. Insufficient reversal or excessive in sign of force in the combi (frame, distance piece, cylinder, and bolting).

---

**For more information:**

- Visit bntechsupport.com or call +1 775 215 1818