















Frame vs. Crosshead Vibration

Failures developing at the running gear or cylinder assembly due to liquid/debris carryover or loose components (piston/nut, crosshead/nut, liner) manifest themselves with impacts transmitted at the crosshead.

Frame velocity monitoring does not allow early malfunction detection and major secondary damage may occur before high frame vibration alarm is announced. API 618 recommends high frame velocity as shutdown parameter.



Liquid Ingestion Damage



Vibration Monitoring vs. Impact Monitoring

The response to impulse events as valve operation and mechanical knocks results in peaks and ring-down profile producing non-stationary content in vibration.

Crosshead vibration measurement detects response to impulsive events as generated by developing faults as fractured or loose components.





Rod Drop – Getting it right In order for rod drop measurements to be effective, some basic assumptions in the measurement should be satisfied: The distance measurement made at the pressure packing case changes in direct proportion to the change in rider band wear. Gravity is the predominant vertical force acting on the piston rod assembly.

- Rod flex is negligible compared to the amount of rider band wear being measured (rod length/rod diameter ratio).
- Operating temperature of the piston is relatively constant.

















Loss of Rod Load Reversal









Three reciprocating compressors provide hydrogen for the catalytic cracker in a major US refinery. In order for the unit to run at full output, all three compressors must run simultaneously. The loss of one machine results in a 20% loss in production.

























