

RULES OF THUMB - TURBOMACHINERY

By Neal Wikert

Wet Gas Compressors

Performance:

Moderately heavy mole weights, therefore high head rise per stage.

Treat as a real gas in performance analysis.

Nozzle loadings: 10% of sonic equals 100 fps for this mole weight range.

Quantity constants are in the 100 to 300 range. At 250 and above you are maxed. 100 and above there is a lot of room.

Design:

Typically two bodies or two sections, 3-4 stages in each, with intercooler in between. Older units may have one body with no intercooler.

H2S environment. Materials are as follows:

Casing: carbon steel

Diaphragms: cast iron or carbon steel

Rotor: low yield strength carbon steel

Do not use copper based seal materials.

Field Testing:

Gas Samples should be taken while taking data, max 20-30 minutes from test (not the next day).

Samples should be kept heated to avoid condensation.

Samples should be taken at the compressor inlet and at the condenser discharge.

Application:

Typical Model #s:

Elliott: 29M or 38M

Should be driven by steam turbine (variable speed driver) because of mole weight swings.

Polymerization (coking) is a problem if temperatures get too high.

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