- lectures to finish before Easter (12.04)
- 5 exercise sets $\frac{40}{5} = 8$ points each
  - ↳ deadline for 5th will be 12.04

For preparation for the exam:

- look into old exams (regular/resitting) and old exercise sets (from other years)

Due to cost, MeG and MeOH are usually re-claimed at topside facilities.

↳ reclam unit → requires high T

Chemical distribution system
- injection:
  - → at platform
  - ↳ at well (bottom-hole / wellhead) ← performed from topside
  - ↳ at pipeline/flowline.
- ↳ the distribution is performed using umbilicals

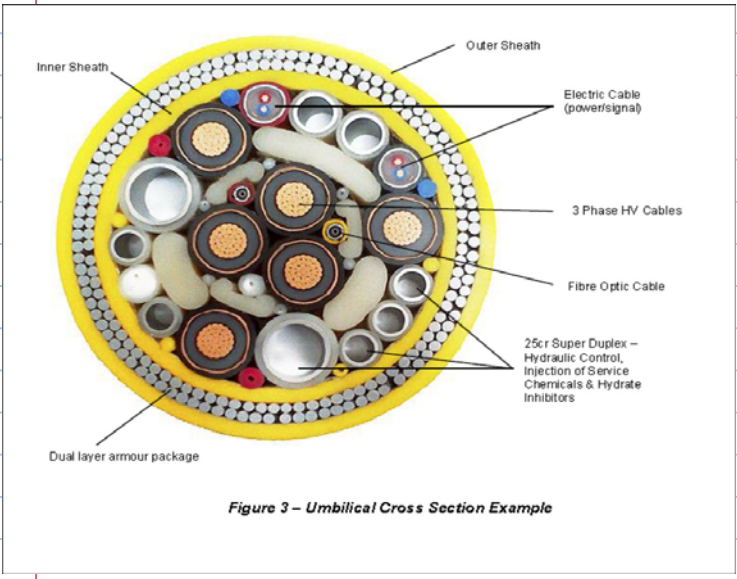
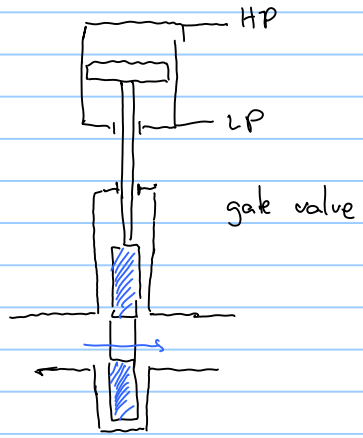
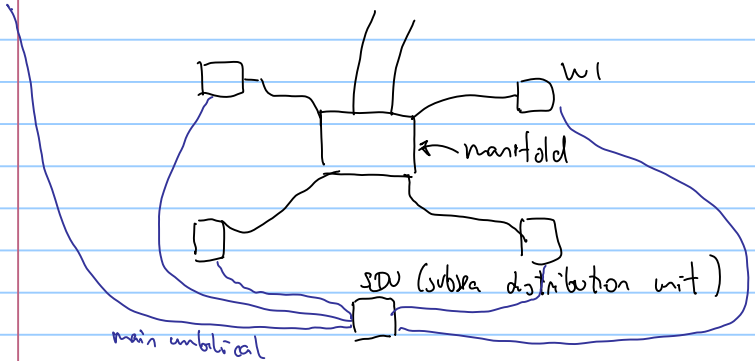


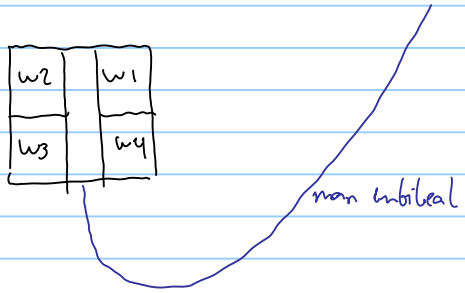

*Figure 3 – Umbilical Cross Section Example*

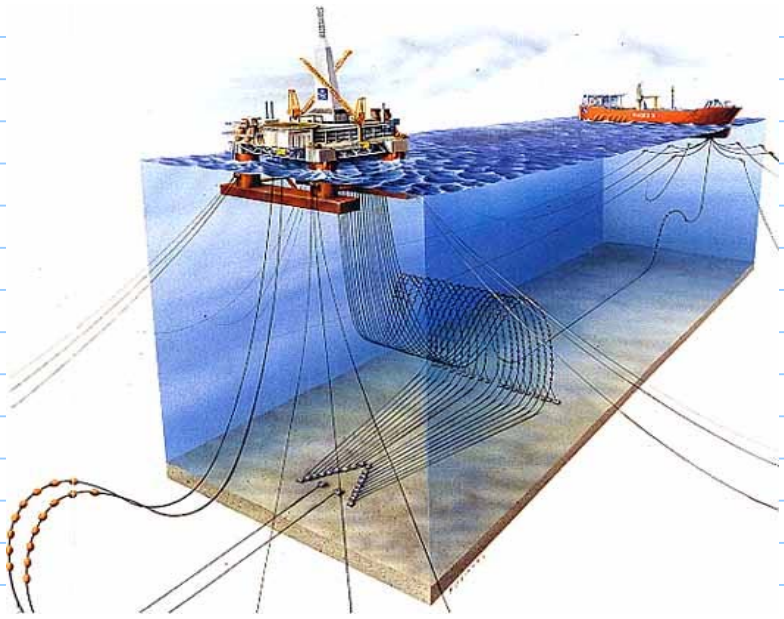
valve actuators




depending on architecture of subsea system

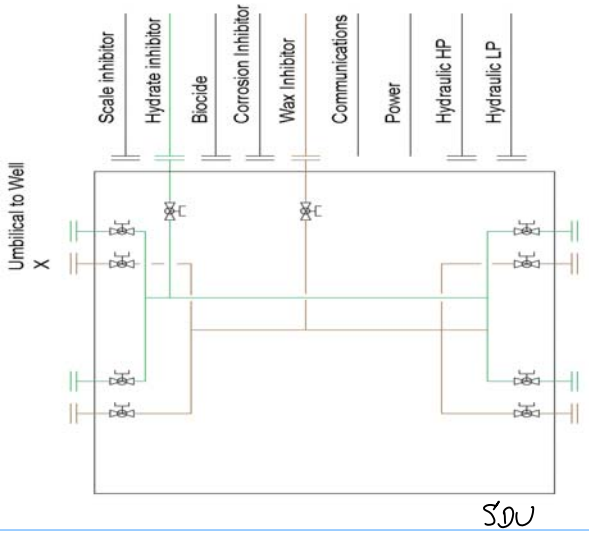


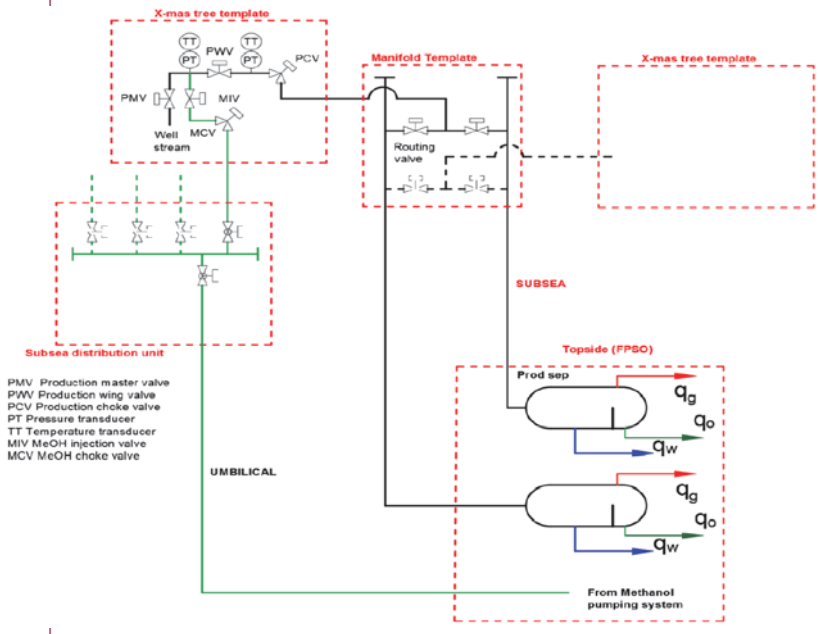


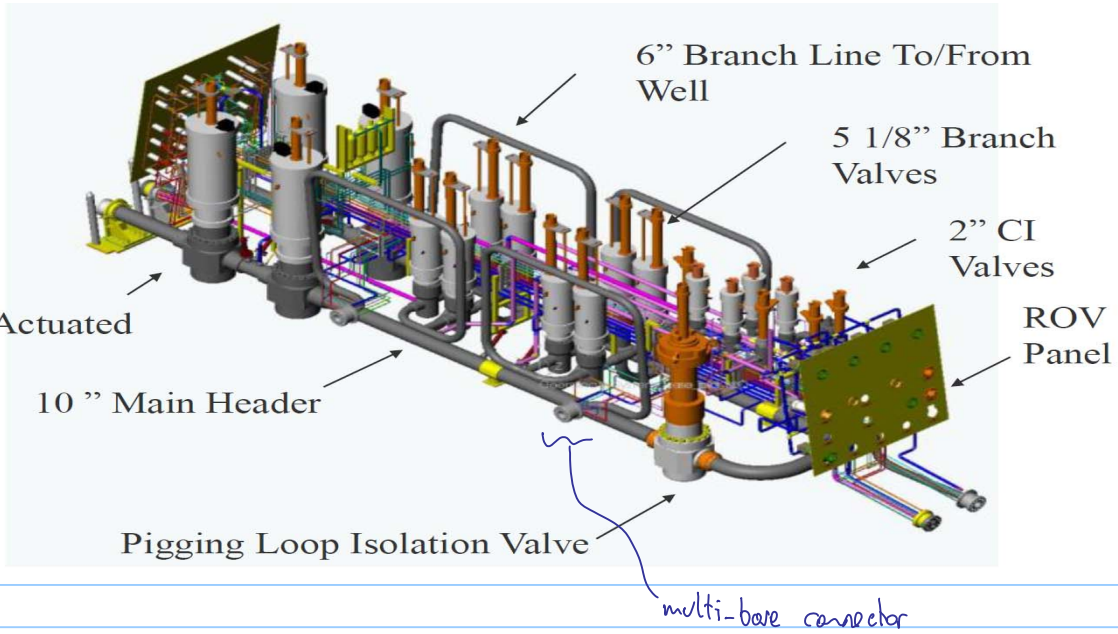
Njord

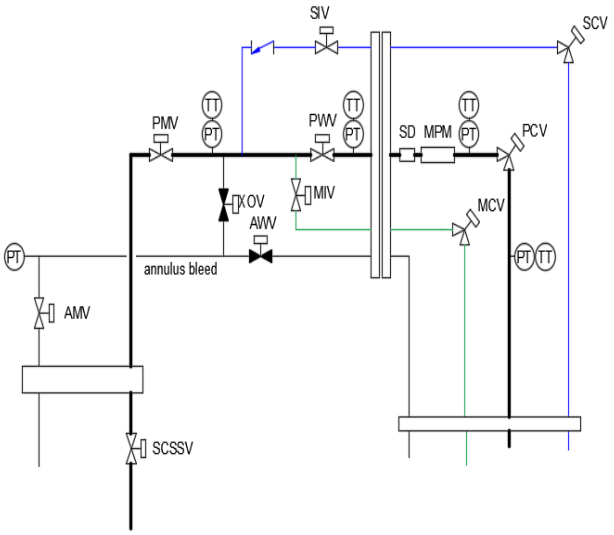

SDU

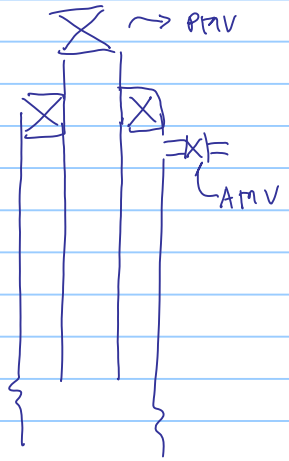



SDU



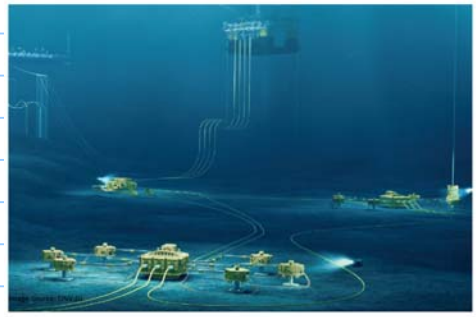

6" Branch Line To/From Well
5 1/8" Branch Valves
2" CI Valves
ROV Panel
Remote Actuated Valves
10 " Main Header
Pigging Loop Isolation Valve
multi-bore connector

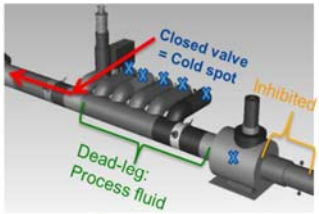

SIV
SCV
PMV
PWV
SD
MPM
PCV
XOV
MIV
AWV
MCV
annulus bleed
AMV
SCSSV

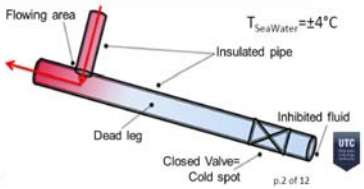

PMV
AMV

# Subsea manifold and dead-leg geometry

- Dead-legs are inherently present



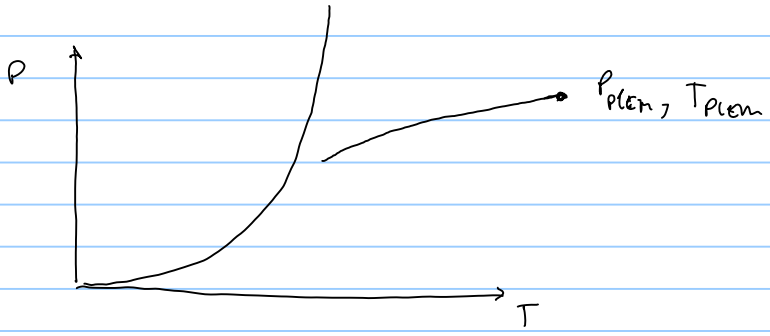


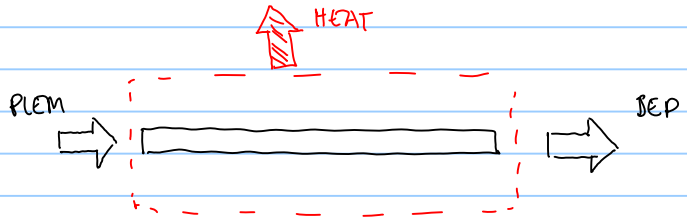

UTC Bergen - 16th June 2016

design of dead-leg geometry must be analyzed during FEED studies.

Problem 1, exercise set 5



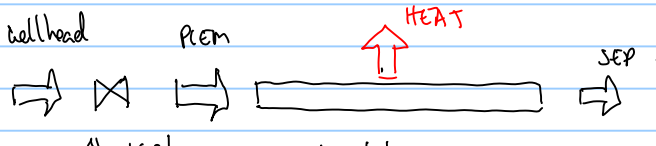

MEG (or MeOH)

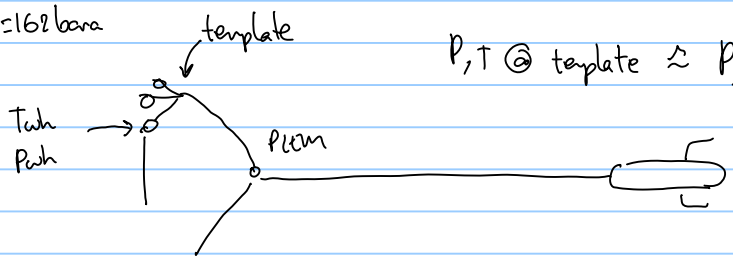



material stream, P, T, composition, rate { molar rate, volume rate, mass rate

ENERGY STREAM { HEAT, POWER

- in the plateau period there is a $\Delta p$ across the choke



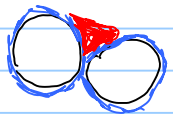

P,T @ template ≈ P,T @ PLEM

guess $P_{wh}$ → hysys calculates $P_{sep}$

not → is $P_{sep} = 30$ → finish

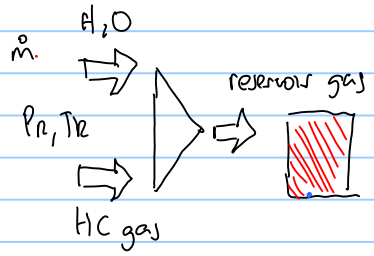
to make this process automatic, it is possible to use an adjust

- the wellhead stream must be saturated with water



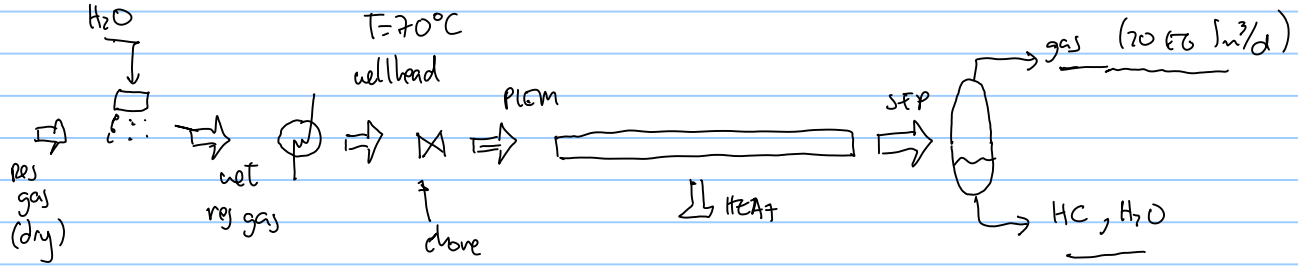
the gas is saturated with water @ $P_R$, $T_R$

↓ 276 bara ↘ 92 °C




$$\chi = 0 = \frac{m_L}{m_L + m_V}$$

- the field gas rate is measured downstream the separator




$$\dot{m}_g = 70\,E6\ Sm^3/d \cdot \rho_g$$

$$\dot{m}_t = \dot{m}_g + \dot{m}_{H_2O} + \dot{m}_{cond}$$