17th Dec, 2018

→ Cornel presents 3 alternatives

Questions

→ Why is the bypass designed based off only vane fractions? (ME)

↔ Why is symmetry plane important?

Byrd of 2nd concept give 2×90° bends which is similar to 1st.

Honeycombs are high pressure loss devices.
If yes, use honeycomb but be careful.
Parallel plates, YES!!
(Don't be enthusiastic about hydrophobic)
Be careful with coalescence in salty water.

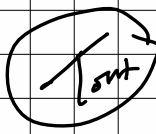
→ Why not place the separator in the same vertical plane as the test section

→ Rene does not like the 2 bends before the test section → can be mitigated by bigger bend

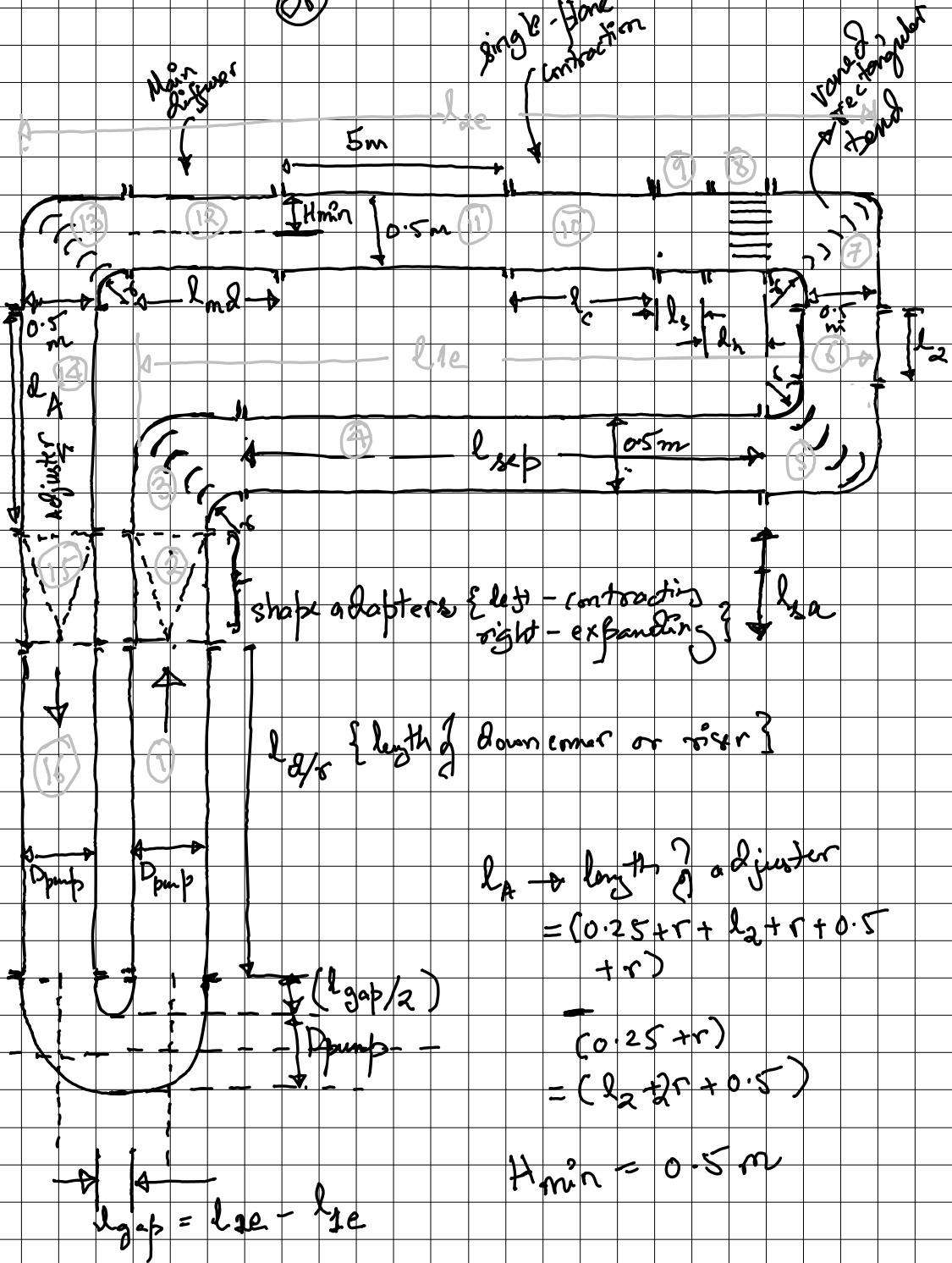
→ What is the real problem or limitation with volume? → whatever can be stored

→ What is kernel size required?

chicken-egg problem



→ Test section level with the separator means more filling & draining times.
(Rene)



$l_A \rightarrow$ length of adjuster

$= (0.25 + r + l_2 + r + 0.5 + r)$

$- (0.25 + r)$

$= (l_2 + 2r + 0.5)$

$H_{min} = 0.5\,m$

Parametrization by component (all dimensions in $^{6}m^{7}$)

RISER

① - Straight
- pipe
- $l_{d/r}$
- D_{pump}
- D_{pump}
- 0
- 0
- $H_{min} + 0.25 + 2r + l_2 + 0.5 + r + l_{sa} + l_{d/r}$
- $H_{min} + 0.25 + 2r + l_2 + 0.5 + r + l_{sa}$
- 0
- 0
- 0
- 0
- 0

Circle to rectangle adapter

② - Adapter
- C2R
- l_{sa}
- Dpump
- 0.5 m
- 0
- 1.5 m
- $H_{min} + 0.25 + 2r + l_2 + 0.5 + r + l_{sa}$
- $H_{min} + 0.25 + 2r + l_a + 0.5 + r$
- 0
- 0
- 0
- 0
- 0

(3) — Bend

— ducted

Bend 1

— $(2 \times 0.5) + r$ { this is how length is calculated }

— 0.5 m { height }

— 0

— 1.5 m { width }

— 0

— $H_{min} + 0.25 + 2r + l_2 + 0.5 + r$

— $H_{min} + 0.25 + 2r + l_2 + 0.25$

— 0

— 0

— thin_rounded { we assume rounded bends }

— 0

— 0

Needs update for new separator

(4)

(5) – Bend

– Ducted

Bend 2

– $(2 \times 0.5) + r$ { this is how length is calculated }

– 0.5 m { height }

– 0

– 1.5 m { width }

– 0

– $H_{min} + 0.25 + 2r + l_2 + 0.25$ { height in }

– $H_{min} + 0.25 + r + l_2$ { height out }

– 0

– 0

– thin-sound?

– 0

– 0

– 0

⑥ – Straight

– Ducted

Small Riser

– l_2

– 0.5

– 0.5

– 1.5

– 1.5

– $H_{min} + 0.25 + r + l_2$

– $H_{min} + 0.25 + r$

– 0

– 0

– 0

– 0

– 0

(7) - Bend
- Ducted
- (2x0.5) + r
- 0.5
- 0
- 1.5
- 0
- Hmin + 0.25 + r
- Hmin
- 0
- 0
- thin - row 27
- 0
- 0

Bend 3

Honeycomb section

(8) - Honeycomb
- Ducted
- L_honeycomb
- 0.5
- 0.5
- 1.5
- 1.5
- H_min
- H_min
- 0.005 { not used }
- Mesh Width { size of honeycomb cell }
- l { length of the cells }
- L_inlet Honeycomb { set inlet length scale } (maybe as vane-spacing)
- 0

(9) Settling chamber

- Straight
- Ducted
- ~~Contraction~~ Settling
- 0.5
- 0.5
- 1.5
- ~~1.5~~ 0.5
- Hmin
- Hmin
- 0
- 0
- 0
- 0
- 0

(10) - ~~Straight~~ Contraction Single

Contraction

- Ducted
- $l_{contraction}$
- 0.5
- 0.5
- 1.5
- 0.5
- H_{min}
- H_{min}
- 0
- 0
- 0
- 0
- 0

} this activate the plane - contraction assumption

(11)

duct-system

- Straight
- ducted
- 5 m
- 0.5
- 0.5
- 0.5
- 0.5
- #min
- #min
- 0
- 0
- 0
- 0
- 0

{ fixed length

} fixed dimensions of inlet & outlet

(12)

Main diffuser

- Straight
- Ducted
- Lmd
- 0.5
- 0.5
- 0.5
- W expansion
- Hmin
- Hmin
- 0
- 0
- 0
- 0
- 0

} length of main diffuser
} plane ducted expansion

} choose the expansion width mostly 1.5 m

(13)

- Bend
- ducted
- 0.5
- 0.5
- W_{exp}
- W_{exp}
- H_{min}
- $H_{min} + 0.5 + \delta$
- 0
- 0
- 0
- 0
- 0

Bend - 4

(14)

Adjusters

- Straight
- Ducted
- l_{adj}
- 0.5
- 0.5
- w_{exp}
- w_{ext}
- $H_{min} + 0.5 + r$
- $H_{min} + 0.5 + r + l_{adj}$
- 0
- 0
- 0
- 0
- 0

(15)

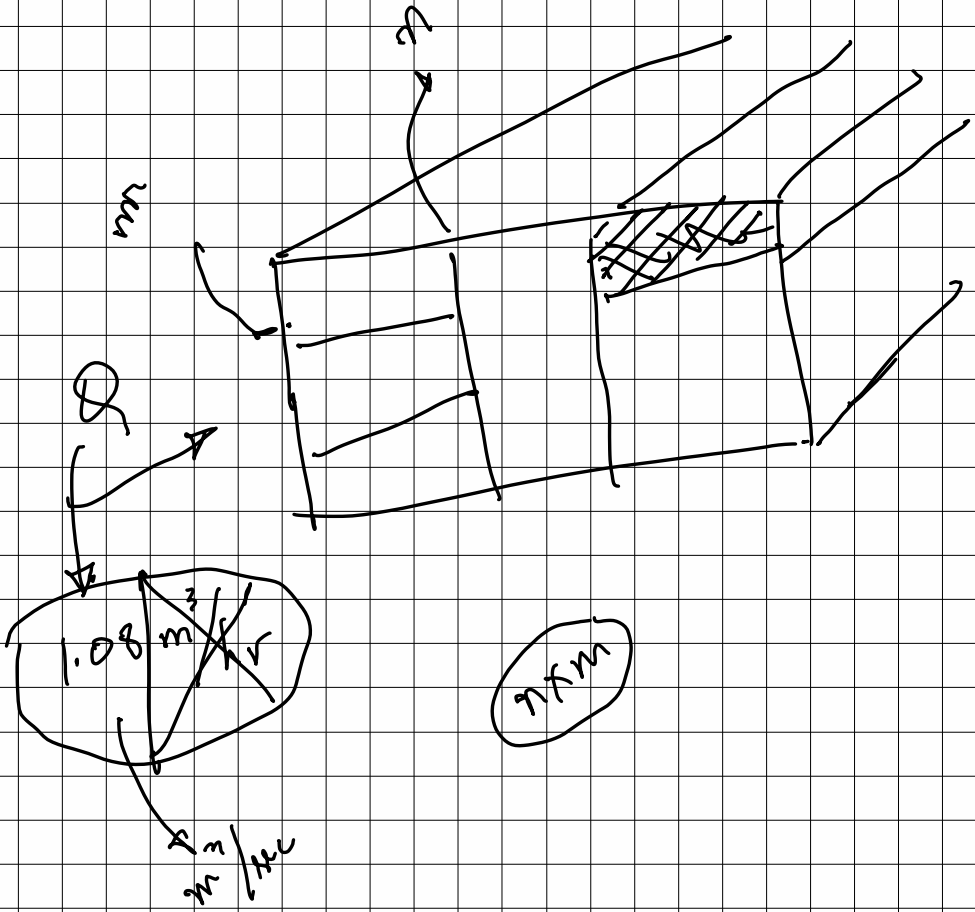
Shape-adaptor

- Adapter
- R2C
- l_{sa}
- 0.5
- D_{pump}
- W_{exp}
- 0
- $H_{min} + 0.5 + r + l_{adj}$
- $H_{min} + 0.5 + r + l_{adj} + l_{sa}$
- 0
- 0
- 0
- 0
- 0

(16)

Down comer

- straight
- fitfit
- $l_{d/c}$
- P_{pump}
- P_{pump}
- 0
- 0
- $H_{min} + 0.5 + r + l_{adj} + l_{sa}$
- $H_{min} + 0.5 + r + l_{adj} + l_{sa} + l_{d/c}$
- 0
- 0
- 0
- 0
- 0


1.08
m³/hr
m³/sec