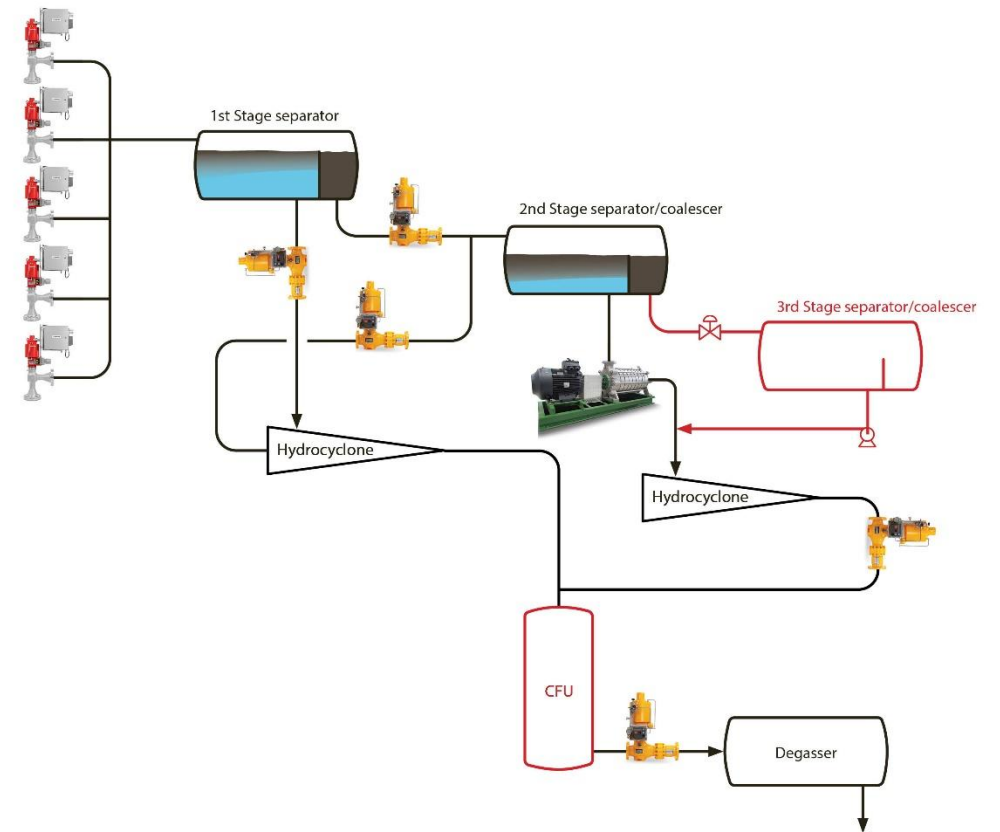





Optimize Production by Reducing Shear

UK Technology Leadership Board 2026

Niels van Teeffelen
CEO

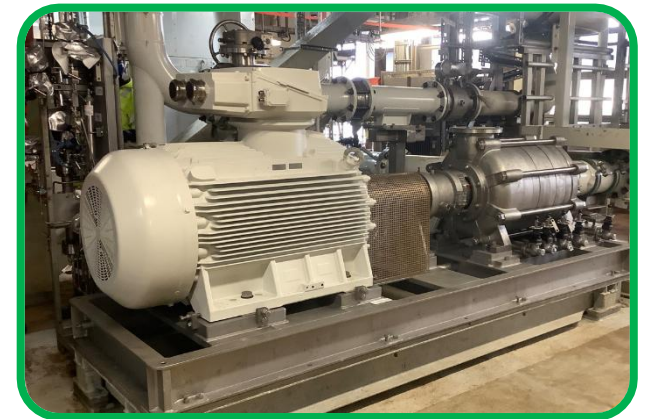


Leading provider of **LOW SHEAR** process solutions

- Low shear choke valves  mokveld
- Low shear control valves  mokveld
- Low shear pumping systems  typhonix
The Low Shear Company

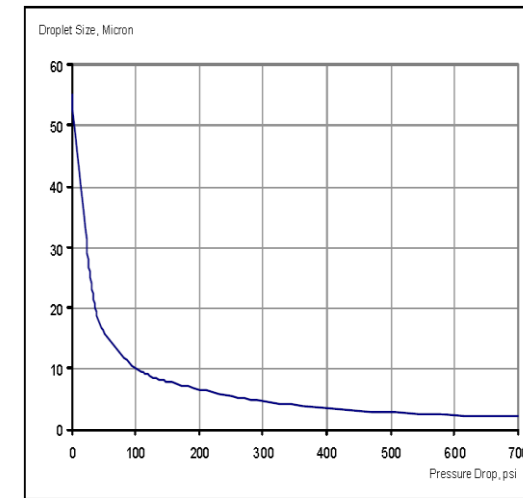
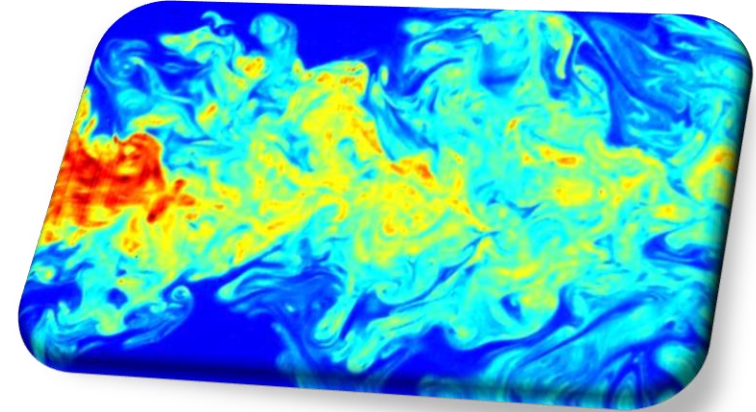


typhonix
The Low Shear Company



Effects of Shear in Oil Production

- Shear is related to turbulence
- Turbulence causes mixing of the phases
- High intensity turbulence causes droplet break-up and intense mixing -> emulsions
- Low intensity turbulence can cause coalescence
- **Main sources of high intensity shear found u/s main separation equipment in valves and pumps directly affecting the separation efficiency**



SPE 56643

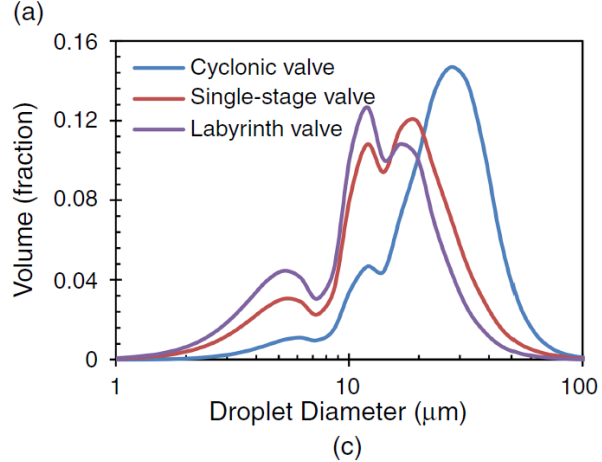
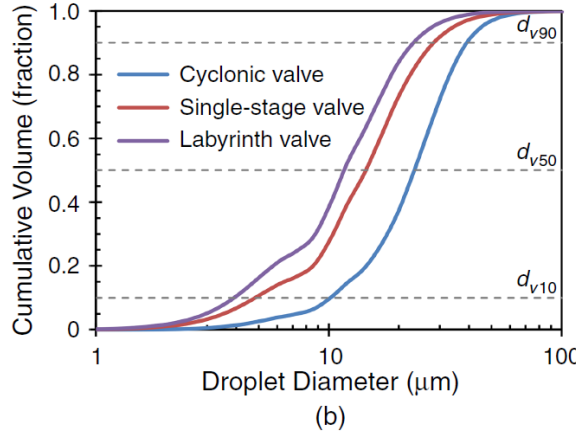
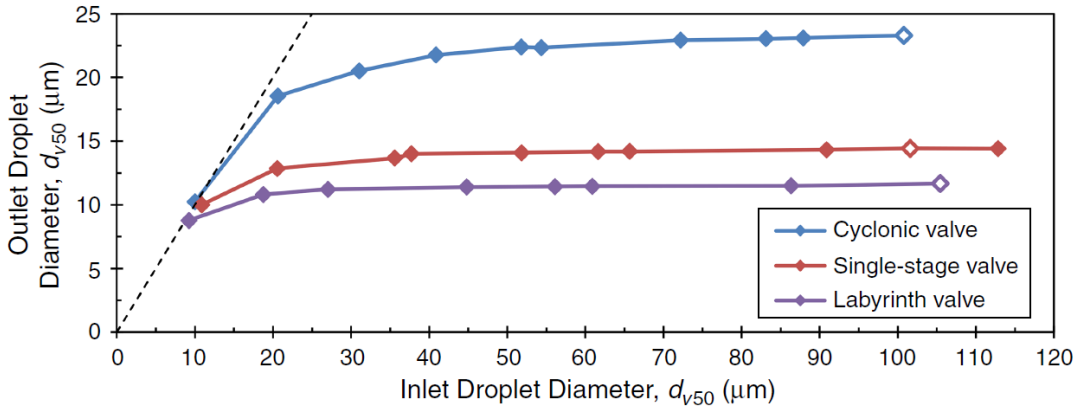
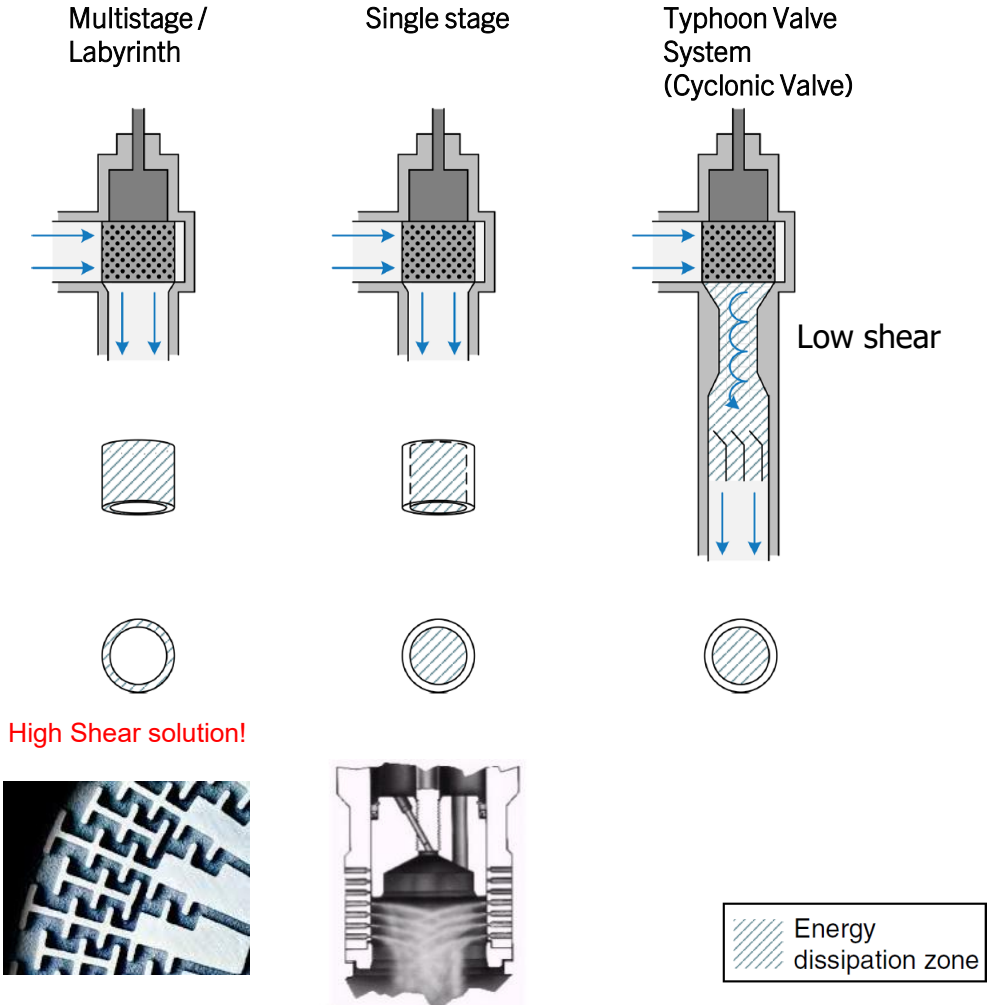


Low shear
equipment

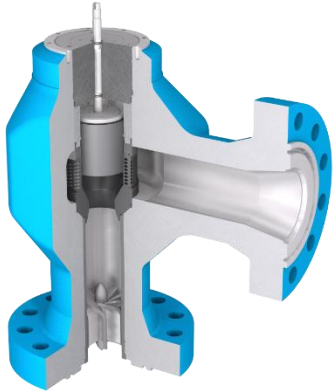
Standard
equipment

DEMONSTRATING SHEAR IN 30 SEC

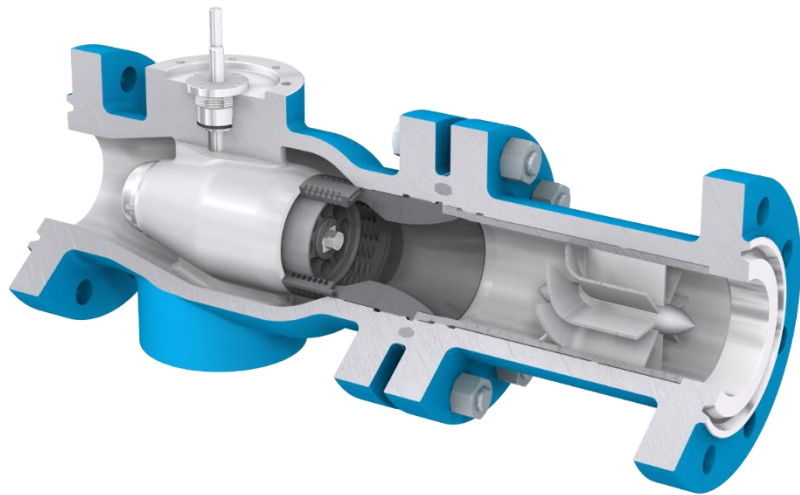
Droplet break-up in Valves



Typhoon Valve System



WINNER
ONS²⁰₁₈
INNOVATION
AWARD



Typhoon Valve System

low shear technology
for enhanced separation...

RZD
LS-R



<https://youtu.be/Z4L6Nk7oBd4>

Low Shear Typhoon Valve System



PROTOTYPE TEST EQUINOR

dP 4 to 8 bar
(58 - 116 psi)

50-90% reduction
of oil in the
produced water



PILOT TEST OSEBERG C

dP 75 to 90 bar
(1090 - 1300 psi)

45% reduction
of oil in the
produced water



INSTALLATION TROLL C

dP 15 to 20 bar
(218 - 290 psi)

60% reduction
of oil in the
produced water



INSTALLATION AUSTRALIA

dP: 2,5 bar (36 psi)

23% improvement of
CFU efficiency



SEPARATOR DEBOTLENECKING

dP: 40 bar (580 psi)

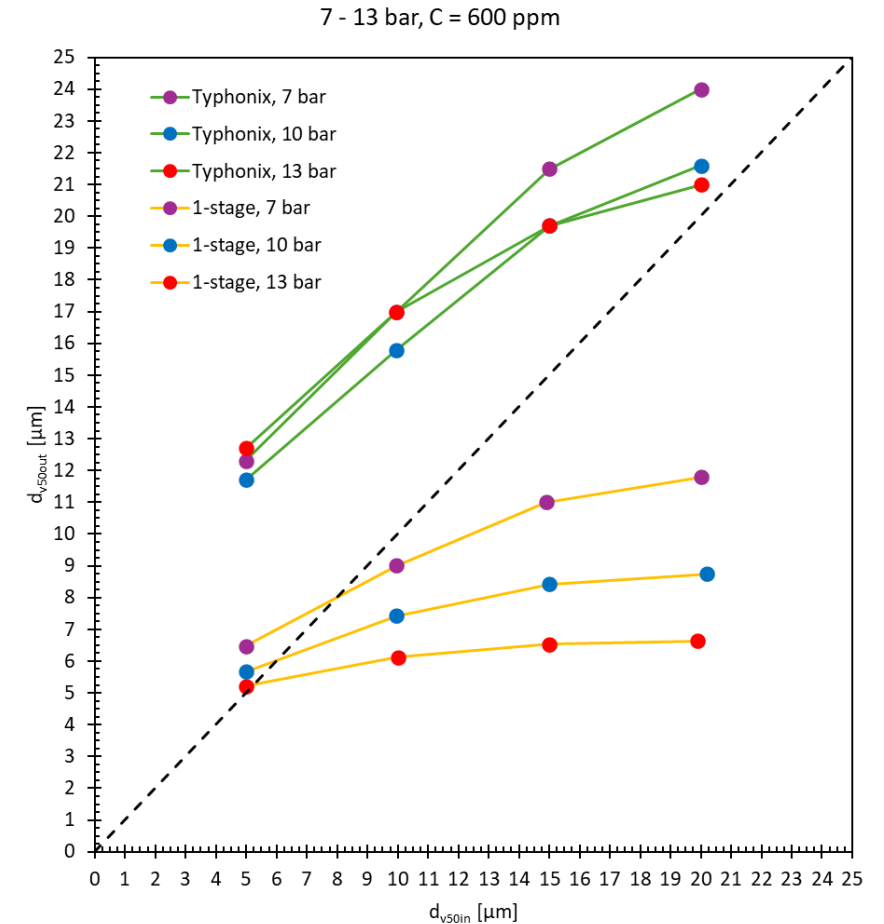
>75% Improvement of
MP separator water
quality

All sampling and analysis performed by independent 3rd parties

Typhonix Low Shear Pumps

Combining robust centrifugal pump design with positive displacement pump low shear performance

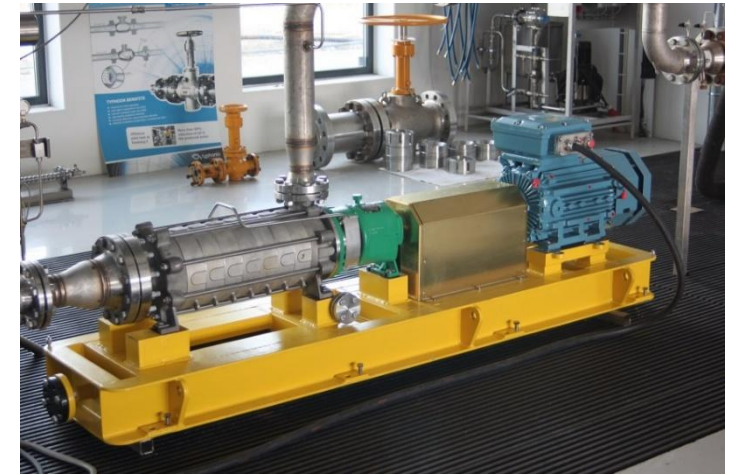
- Low maintenance, high reliability
 - Field experience: zero unplanned maintenance requirements
- Users:



Typhonix Pumps – Field experiences

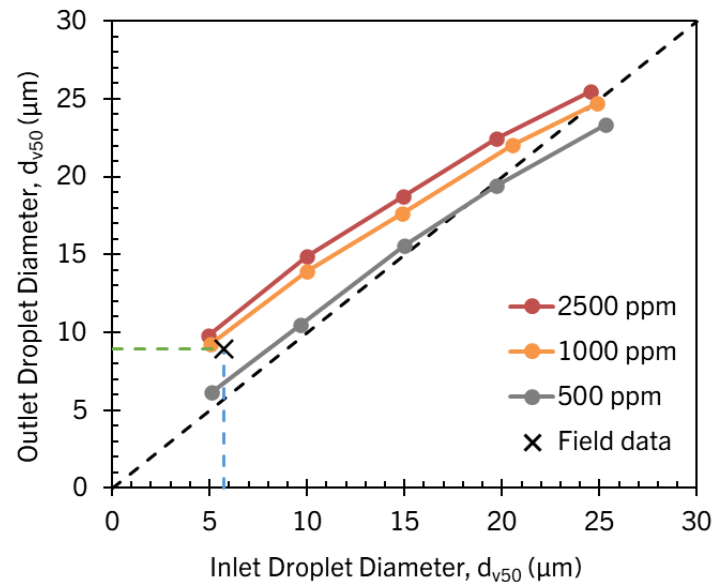
Shell offshore Malaysia

- Design chosen for high reliability and low shear performance
- In continuous operation since august 2017
- Field data shows coalescence performance (> 50 % increase of d_{v50})

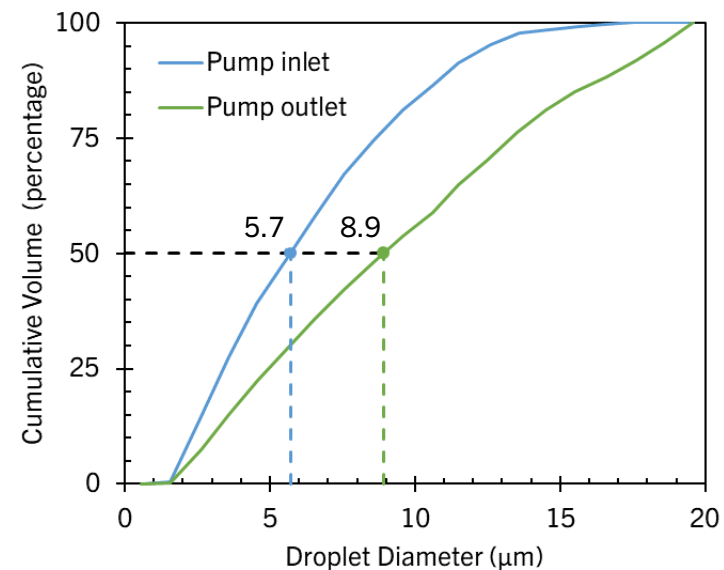


The Typhonix Pump was supplied in BB4 configuration with a single mechanical seal.

Performance test at Typhonix Test Center



3rd party field measurements



- Operating range:
37 m³/h 37 m head (163 gpm 121 ft)
- Low vibration:
< 0.4 mm/s RMS
- Low NPSHr (3%):
< 1.4 m (4.6 ft)
- Oil concentration:
600 ppm (200 - 1000 ppm)

Why Apply Typhonix Technologies

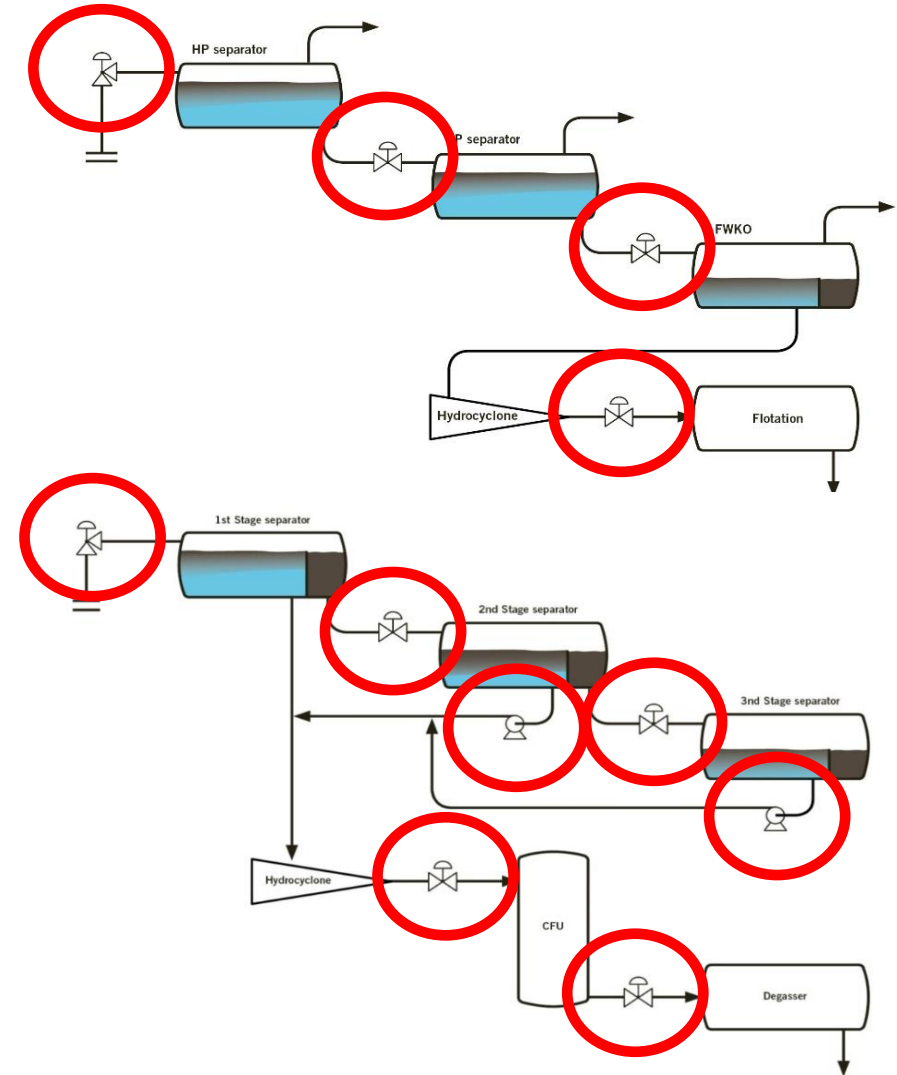
Cost efficient increased separation efficiency

- Improved oil and water quality
- More compact separation systems
- Increase separator capacity
- Reduce OiW in discharge
- Robust separation systems on unmanned installations
- Reduced requirements for chemicals and energy (heat)
- Reduced frequency for PW filter regeneration / replacement
- Robust and reliable low shear pump



Where Apply Typhonix Technologies

- Chokes
- Level control valves
- Produced water treatment
 - Including (hydrocyclone) reject valves
- MEG/TEG regeneration systems
- Slop water, closed drain and open drain



Customers and Installations



90+ low shear installations



Thank you for your attention

Niels van Teeffelen
CEO

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