



## OVERVIEW

The specialist development team within DPS have been heavily involved in the devising and development of designs for a number of market leading solids fluidisers. CyFlo™ is the third generation, state of the art, device currently available on the market.

## THE PROBLEM

Solids enter production separators, where they accumulate due to their high specific gravity. If this accumulation is left unchecked, solids will build up over time until operational problems occur, including:

- fouling of internals and therefore loss of performance
- level instrument failure
- downstream erosion of valves, pipe fittings, deoiling hydrocyclones and pumps
- equipment blockages

Ultimately it will be necessary to enter to the vessel and remove solids during process shutdown - however, their incorrect removal can cause just as much damage through erosion



## THE SOLUTION – ONLINE SOLIDS REMOVAL

Regularly removing solids can prevent operational problems and improve equipment availability and life, but can mean shutting down the equipment and removing the solids manually or via a jetting system.

However, one can allow solids to be removed efficiently online with no equipment shutdown and no upset to the process.

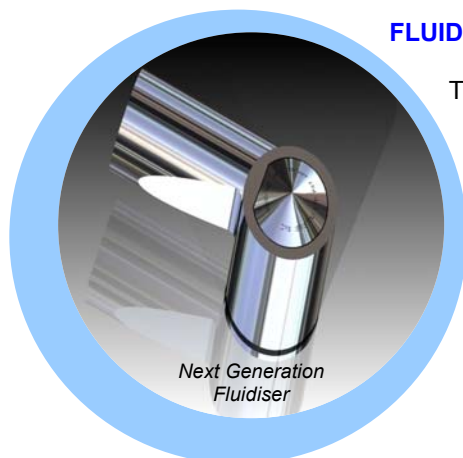
As sand removal and handling experts, DPS have the knowledge and ability to supply complete bespoke / tailored solutions regardless of the fluidiser selected – we specialise in solids *management*, not just removal.







## FLUIDISERS:

There are a number of fluidiser units available on the market at present, and DPS engineers have been directly involved in many, including the design of both TORE and HydroTrans units.

To ensure this evolution is maintained, DPS have recently designed their latest fluidiser offering – (patent applied for) CyFlo. This unit offers all the same advantages as the others currently available, but the key difference is that it also allows the *removal of solids from any orientation* within the vessel.



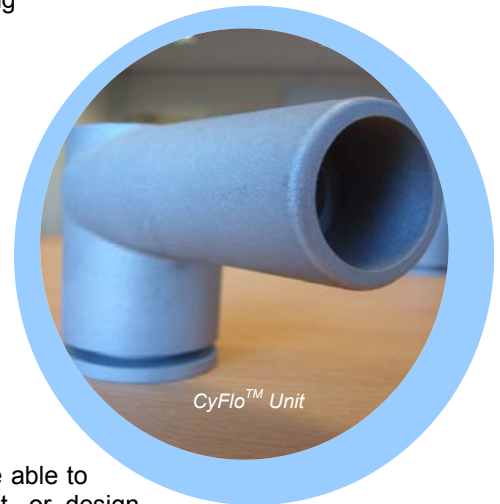
	JETTING NOZZLES	REVERSE VORTEX	STABLE VORTEX	CYFLO
Method of Solids Fluidisation	Jetting	Recessing Reverse Vortex	Stable Inverted Vortex	Recessing Forward Vortex
Zone of Influence	Totals solids volume	4 – 6 times diameter of head	6 – 10 times volume of head	Up to 60 times diameter of head
Flow Patterns				
Gas Blow by	Not a problem	If device is inverted the vortex can entrain gas	Not a problem	Not a problem
Flow Required	60+ m <sup>3</sup> /h	16 m <sup>3</sup> /h for a manifold of 4 heads	16 m <sup>3</sup> /h for a manifold of 4 <del>hydrotrans</del> heads	16 m <sup>3</sup> /h for a manifold of 4 heads – 1" unit
Feed Pressure	6 barg above vessel pressure	0.5 barg above vessel pressure	0.5 barg above vessel pressure	0.5 barg above vessel pressure
Online Solids Removal Capability	NO – due to turbulence outside of solids base	YES – due to local fluidisation effect	YES – due to local fluidisation effect	YES – due to local fluidisation effect
Erosion Effects	Erosion of jetting nozzles is possible also vessel walls due to impingement of jet	Erosion of device foot due to unstable vortex reversing past. Erosion of vessel wall due to solids being forced down and then reversing in flow field beneath device	Top of fluidisation head is cast and additional material is added here in case of erosion. No vessel erosion due to floor pattern pushing all solids up and away from wall	Forward flow eliminates erosion about device foot. All cast units have additional material for extra margin
Solids Removal	Uncontrollable slurry concentrations	Slurry concentration can be controlled	Slurry concentration can be controlled	Slurry concentration can be controlled

#### CYFLO DESCRIPTION:

- Dedicated motive supply (process water) enters CyFlo tangentially and swirls in annulus
- Fluid mixes with solids outside unit, which then enter discharge pipe located remotely
- Solids above CyFlo collapse into zone of influence
- Inlet has flow indicator and globe valve for control, set during commissioning
- Globe valve on bypass (dilution) line also sets solids concentration

#### CYFLO ADVANTAGES:

- It can be installed in ANY vessel
- It offers a discharge pipe at various positions
- Small and compact unit for ease of fitting
- No slurry pump required
- Low pressure drop and non-pressure retaining
- Slurry density controllable up to high solids content
- Minimal water requirement
- Makes solids highly mobile for transport through pipe



With a wealth of experience in the handling and movement of solids, DPS are able to offer either complete solids management systems including the CyFlo unit, or design solution around other fluidisers as required.

