

# Solids Handling Process-Systems

## Don't let sand and waste solids get in the way of your production

Our field-proven technologies will integrate seamlessly, taking unwanted solids from production to disposal. Whether it is upstream removal to protect equipment, creating tolerance in the production process, or protecting your reservoir from pore blocking, our sand-handling technologies will remove the solids from your production fluids. We don't just supply the equipment; we ensure that you get the process you need.

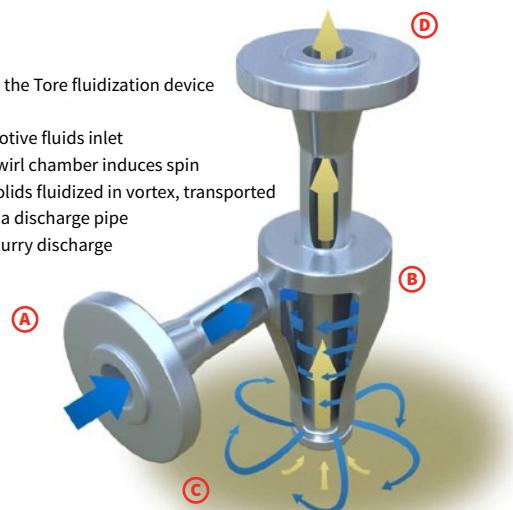
Our Tore™ fluidization device and proprietary separation cyclones are the core foundation technologies on which our solids-handling portfolio is built; their robust performance and proven track record allow us to guarantee efficient and reliable operation. All our products are backed up by experienced engineering and fabrication professionals and are supported by our comprehensive team of operationally experienced service and aftermarket technicians. NOV has delivered sand handling equipment to hundreds of projects and has more than 5000 Tore devices in operation, worldwide.

### Our technologies:

- Wellhead desanding
- Vessel desanding - Tore™OVD and jetting
- Tore™Trap produced water cyclonic desanding
- Tore™Scrub sand handling and sand cleaning
- Multiphase desanding
- Solids/slurry transportation
- Separator plate packs
- Nutshell filters
- Coarse and fine cartridge filtration

This is the Tore fluidization device

- A** Motive fluids inlet
- B** Swirl chamber induces spin
- C** Solids fluidized in vortex, transported via discharge pipe
- D** Slurry discharge



## Solids handling



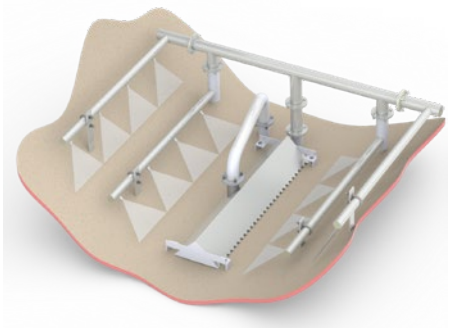
### ToreOVD:

Vessel Internals for robust and reliable sand removal



### Plate packs:

Vessel internals for removal of fine solids and oil droplets



### Jetting:

Cost effective sand removal for low levels of sand production



### Nutshell filters:

Filters for the removal of solids down to 3 micron in addition to oil removal



### ToreScrub:

Receive and clean sand from separators without production loss



### ToreTrap:

Cyclonic produced water desanders for removal of solids down to 10 micron



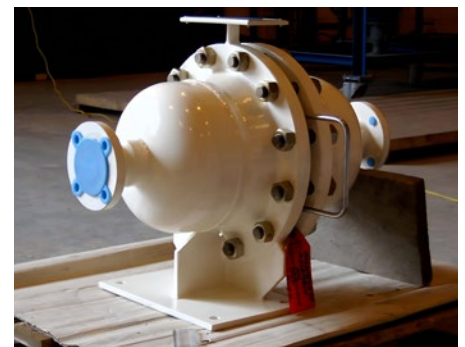
### Cartridge filtration:

Cartridge filtration for polishing of produced water or treatment of smaller flows



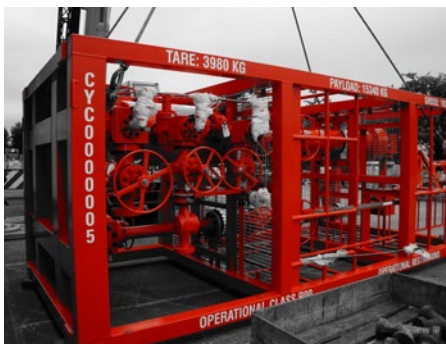
### Bagging frames:

Containers and operator stations for sand handling



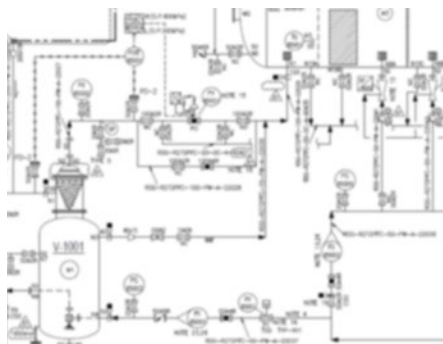
### IPRC:

Ceramic orifice plates for pressure reduction and discharge of slurry streams



### 10k/15k wellhead desanders:

High pressure cyclonic desanders for solids removal from multiphase fluids



### Sand studies

We use evidence, sampling, and analysis to improve your operational reliability

If there is something else you need, call us and we will help.

