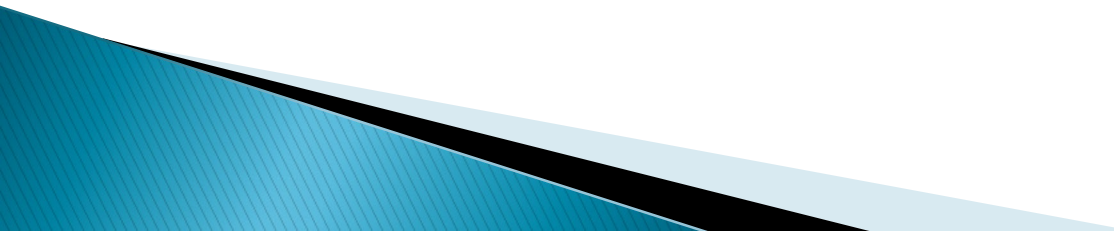


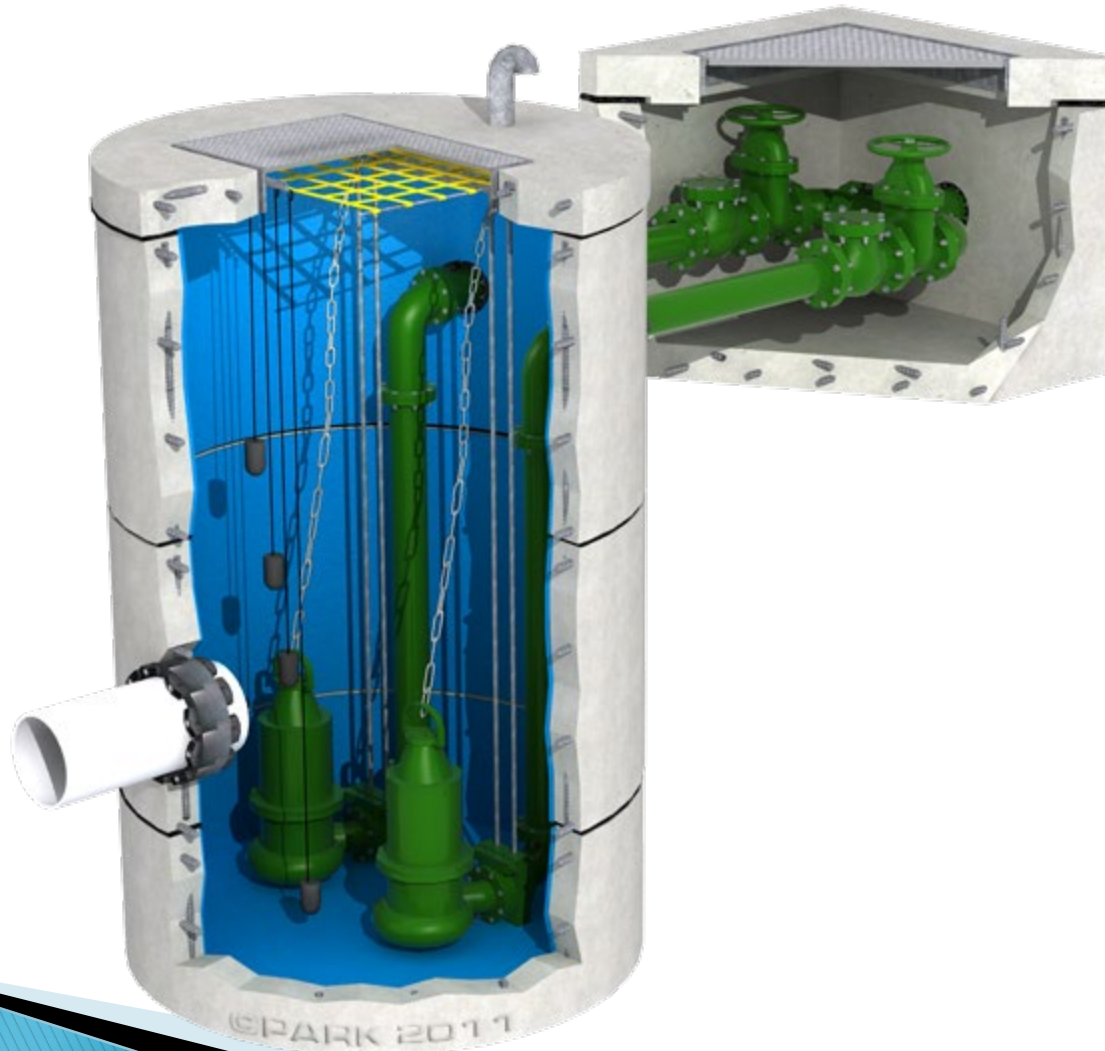
Eliminating Risks in Pumping

By Garry Grant
[Hydro Innovations]

Wastewater Pumps

- ▶ Not at the sexy end of the plant
 - ▶ A necessary part of the production process
 - Wash-down water
 - Clean in place systems
 - Treatment systems..
- 

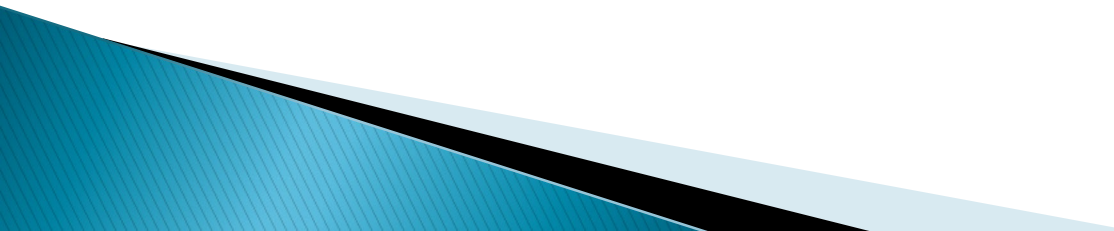
Conventional System







What are the risks?

- ▶ ANY work required, comes with risks
 - Removing a blockage
 - Replacing a worn or broken part
 - Repairing or replacing guide rails...
 - Repairing or replacing discharge elbow
- 





(C) 2007-1991 Daniel Friedman

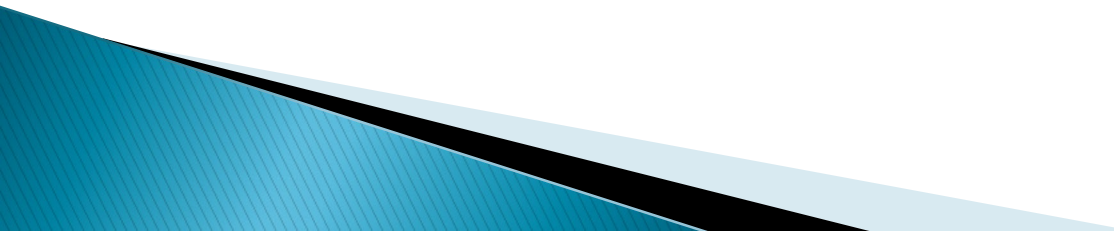




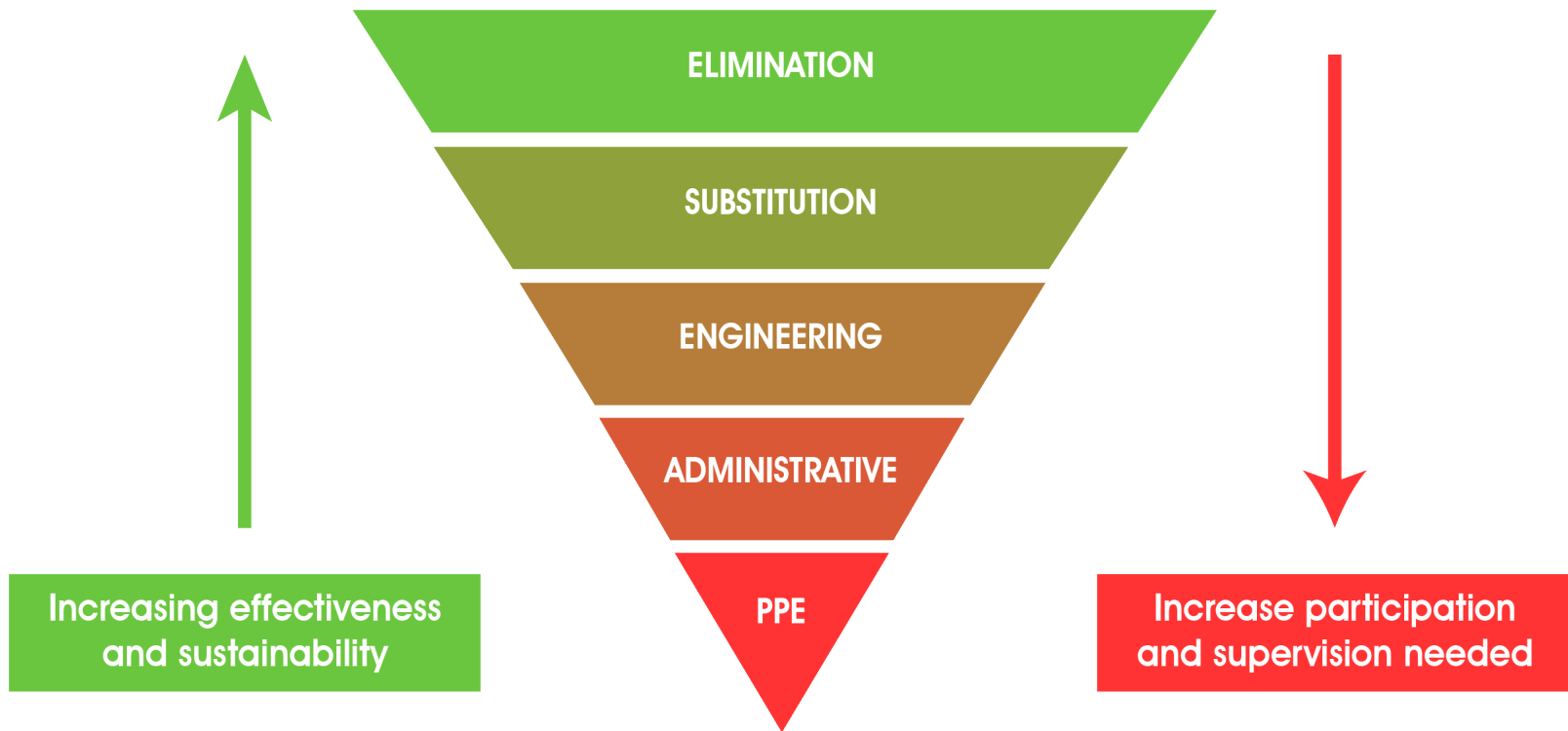




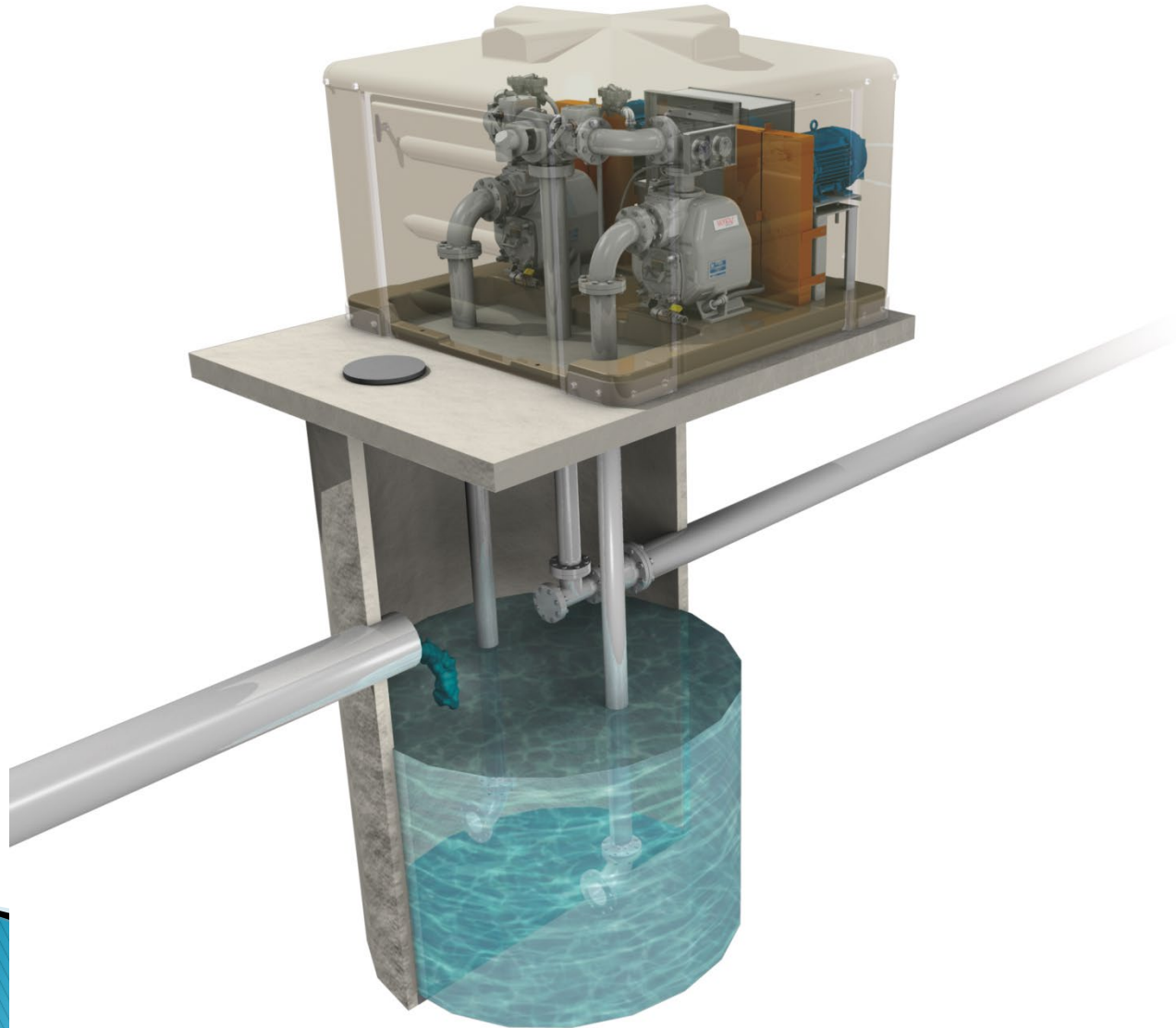
PPE & Safety Equipment

- ▶ Requires a register of trained personnel
 - ▶ Requires a register of rated equipment
 - ▶ Equipment requires regular inspection and/or replacement
 - ▶ All this requires a level of management
- 

HIERARCHY OF CONTROLS



Self-Priming Wastewater Pumps



Self-Priming Wastewater Pumps



What does this change?

- ▶ Working with heights

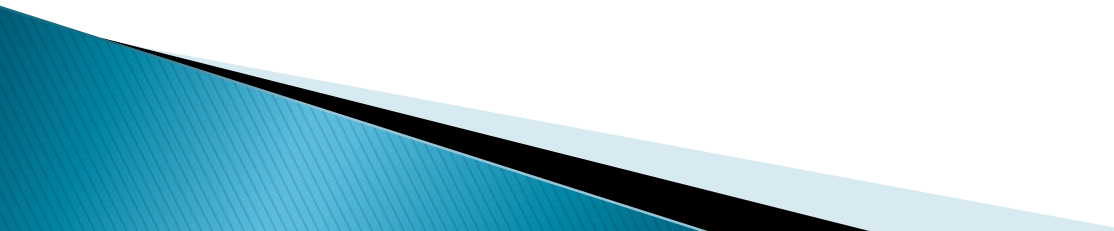
What does this change?

- ▶ ~~Working with heights~~ **Eliminated**
- ▶ Working over water

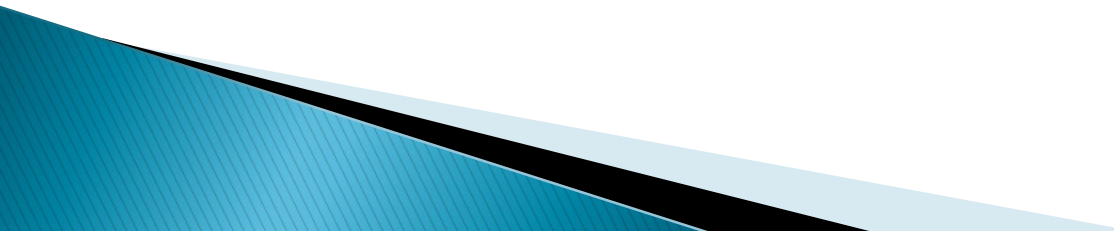
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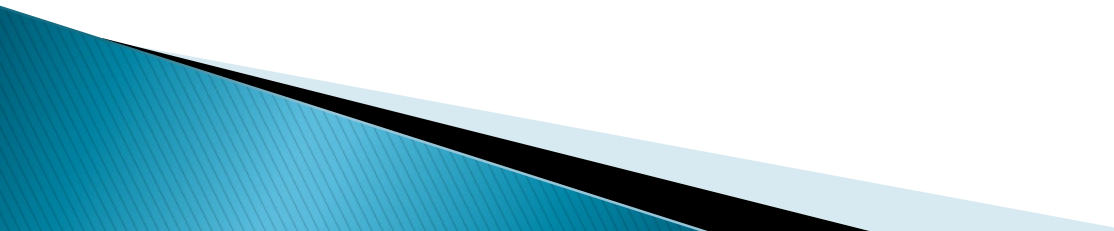
What does this change?

- ▶ ~~Working with heights~~ **Eliminated**
 - ▶ ~~Working over water~~ **Eliminated**
 - ▶ Working with heavy swinging weights
- 

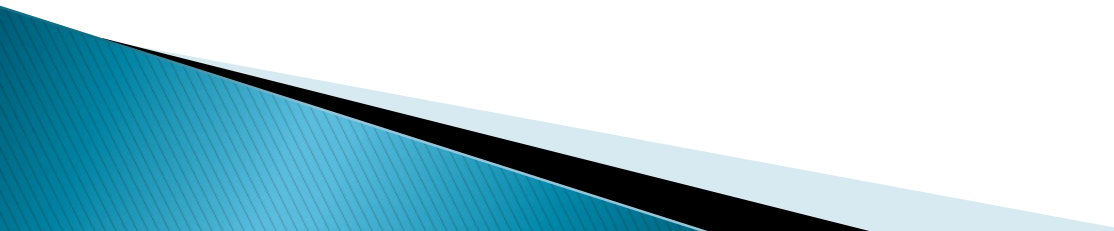
What does this change?

- ▶ ~~Working with heights~~ **Eliminated**
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 - ▶ ~~Working with heavy swinging weights~~
Eliminated
- 

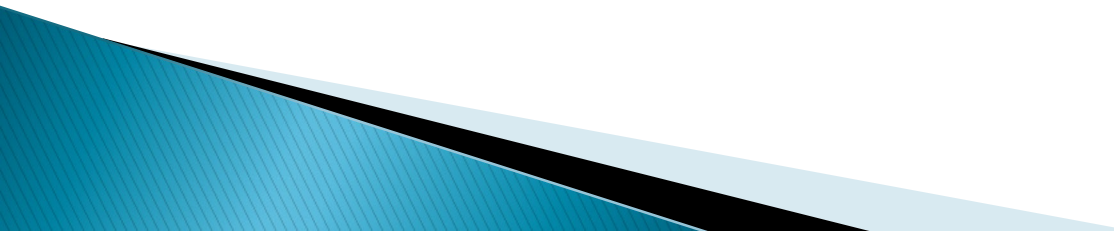
What does this change?

- ▶ ~~Working with heights~~ **Eliminated**
 - ▶ ~~Working over water~~ **Eliminated**
 - ▶ ~~Working with heavy swinging weights~~
Eliminated
 - ▶ Working with cranes
- 

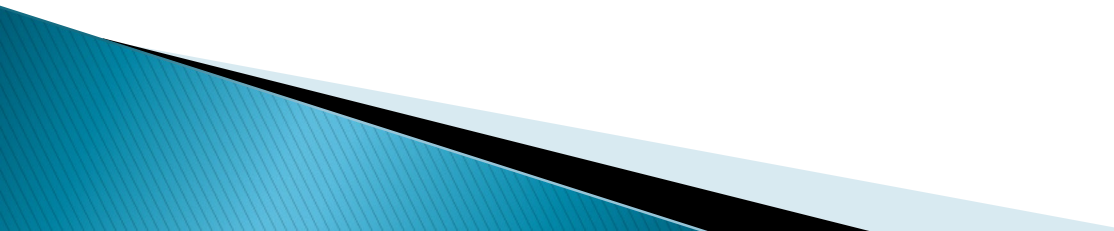
What does this change?

- ▶ ~~Working with heights~~ **Eliminated**
 - ▶ ~~Working over water~~ **Eliminated**
 - ▶ ~~Working with heavy swinging weights~~
Eliminated
 - ▶ ~~Working with cranes~~ **Eliminated**
- 

What does this change?

- ▶ ~~Working with heights~~ **Eliminated**
 - ▶ ~~Working over water~~ **Eliminated**
 - ▶ ~~Working with heavy swinging weights~~
Eliminated
 - ▶ ~~Working with cranes~~ **Eliminated**
 - ▶ Working in confined spaces
- 

What does this change?

- ▶ ~~Working with heights~~ **Eliminated**
 - ▶ ~~Working over water~~ **Eliminated**
 - ▶ ~~Working with heavy swinging weights~~
Eliminated
 - ▶ ~~Working with cranes~~ **Eliminated**
 - ▶ ~~Working in confined spaces~~ **Eliminated**
- 

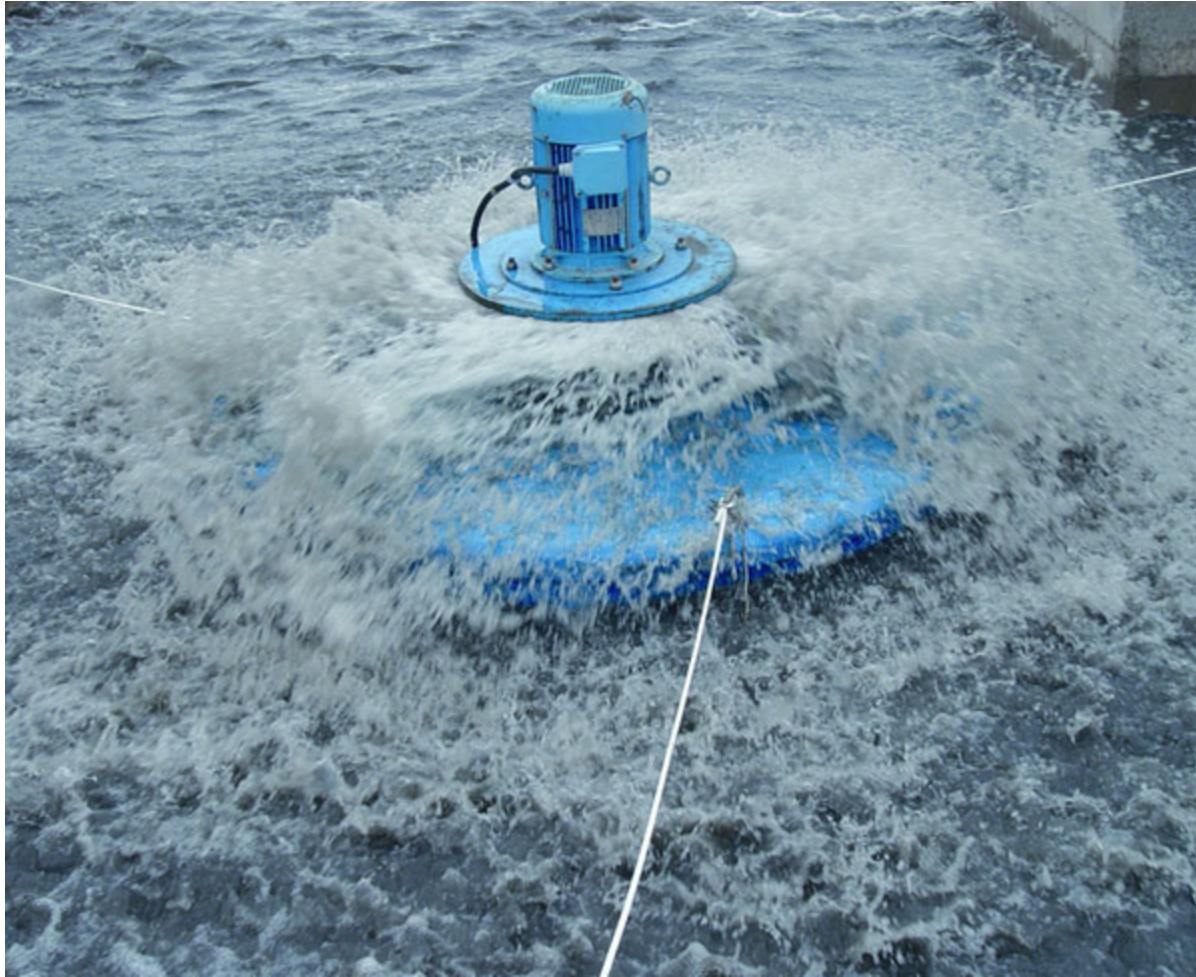
Self-Priming Pumps

- ▶ Eliminate a lot of risks, but...
- ▶ Look for:–
 - Properly rated pressure relief valves
 - Teflon gaskets for fill port
 - Clearance adjustments from non-drive end...
 - Bearing protection [eg double lip seals, atmospheric vent etc]

Your aeration can also be safer



Surface Aerators



Surface Aerators



Surface Aerators



Consider Venturi–Aeration

- ▶ Are “driven” by a self–priming pump
- ▶ All equipment mounted on the bank

Bank mount to eliminate risks



Bank mount to eliminate risks



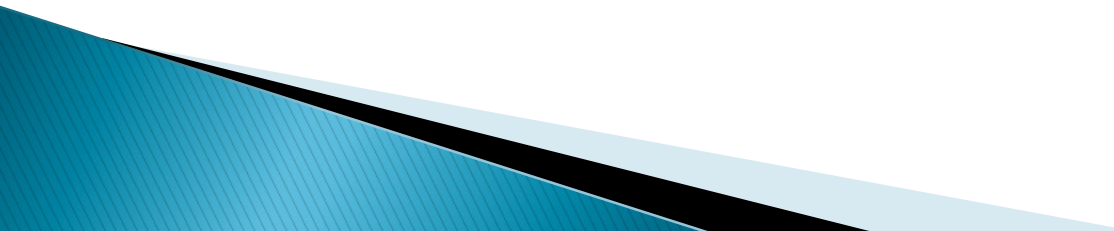
Before



After



Consider

- ▶ “High and Dry” options for safety
 - ▶ “High and Dry” options for reduced intervention.
 - ▶ “High and Dry” options for planned maintenance vs unplanned breakdowns.
- 

Thank You

