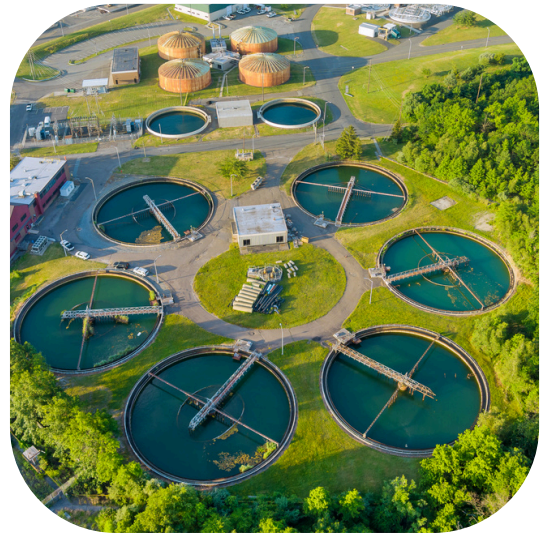


Water Reduction Ideas

Water plays a key role in plastic production, but because water is so precious to both us and our environment, it is essential to find ways to reduce water use in as many ways as we can, including in industrial practices like making plastics.

Here are some ways to reduce water use in gas and oil extraction:



- Water recycling - Collect, treat, and reuse wastewater in industrial processes. This can help conserve water resources and reduce freshwater consumption.
- Optimise industrial processes - Analyse and improve equipment, production lines, and workflows to identify and address inefficiencies.
- Promote water-saving behaviours - Encourage employees to adopt water-saving behaviours.

Here are some ways to reduce water in energy production:

- Use recycled water - Recycled water is relatively drought-proof and doesn't affect freshwater sources.
- Use alternative water sources - Some alternative water sources include treated sewage, agricultural runoff, and water from mining operations.
- Use renewable energy technologies - Renewable energy technologies like wind and photovoltaics don't use water to produce electricity.
- Use more efficient cooling systems - Advanced cooling systems can reduce water use while maintaining efficiency. Examples of more efficient cooling systems include:
 - Cooling towers - These systems evaporate a small amount of water to remove heat from the remaining water. The cooled water is then collected and reused.
 - Closed-loop systems - These systems recirculate water within the system, rather than discharging it after each cooling cycle. This reduces water waste and is often used in industrial processes.
 - Closed-loop evaporative systems - These systems are a combination of a closed-loop heat exchanger and an open tower. The cooling water remains outside of the tower, which reduces contamination and the need for water treatments.
 - Evaporative coolers - These systems cool air by evaporating water. Water has a high enthalpy (the measurement of energy in a thermodynamic system) of vaporisation, meaning it absorbs a large amount of heat when it evaporates. This phase transition from liquid to water vapour can significantly lower the temperature of dry air.



Here are some industrial cleaning processes that don't use water:

- Dry cleaning in place - Uses dry cleaning agents, mechanical action, and thermal energy to clean equipment surfaces. This method can reduce water consumption and wastewater generation.
- Dry ice blasting - Uses frozen carbon dioxide pellets to clean surfaces without water or chemicals.
- Soda blasting - Uses sodium bicarbonate (soda) as an abrasive medium to clean surfaces without water or chemicals.
- Sponge blasting - Uses synthetic sponge media with micro-abrasive particles to clean surfaces. This method is low-dust and low rebound, and the sponge material can be recycled.
- Ultrasound - Uses ultrasound waves to create tiny bubbles that implode against surfaces, releasing energy to clean.

