



- Reservoir Systems
- Destratification
- Toxic Blue Green Algae Control
- Greenhouse Gas Reduction
- Eliminates Autumn Inversion
- Reduce Metal Ions

The WEARS ResMix™ system is unique on the world market for it's performance and energy efficiency.

Since 1995 WEARS has been Involved in the design, manufacture, installation, monitoring and performance evaluation of innovative large axial flow impeller or surface pumps for reservoir circulation and destratification.

Contamination of water supplies can occur due to several micro organisms, including algae, bacteria and fungi. These organisms are capable of imparting tastes, odors and toxic compounds into the water. Algal toxins, taste and odour problems, mostly arise from blooms of Cyanobacteria or Blue-Green Algae (BGA), and from the presence of metallic ions in solution, such as manganese and iron.

Residents in cities and rural towns expect clean and safe drinking water. In recent years there has been an increased awareness of local governments obligation to supply this basic commodity to their customers.

Natural convection generally occurs throughout the water column in winter when the water surface is cooler than the lower levels. However in summer this natural convection generally stops and re-aeration from the atmosphere occurs only in the top few metres of the water column, mixed by wind shear.

Below this level, decomposition of organic material, Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) gradually depletes dissolved oxygen so that the lower levels of the water body become stagnant, anoxic and effectively dead except for anaerobic bacterial activity.

Several problems may result from this stagnation and oxygen depletion.

The WEARS Resmix System can eliminate problems related to stratification and dissolved oxygen, and reduce blooms of Cyanobacteria in lakes and reservoirs.

Pumping at low flow velocities and using a draft tube to force top to bottom exchange, the system is very economical.

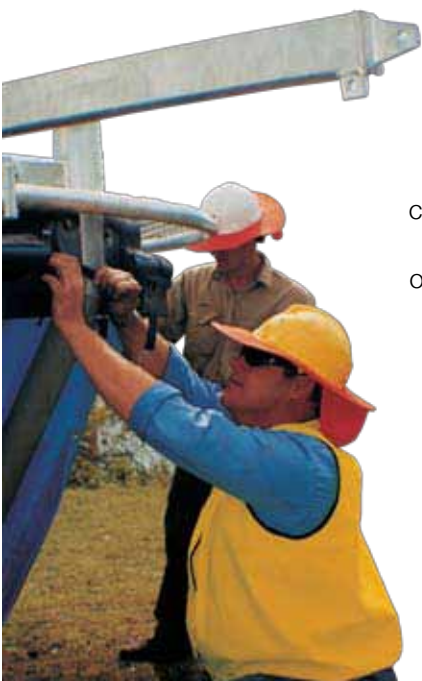
The WEARS ResMix™ System:

- Oxidizes metals
- Reduces or eliminates taste or odour problems
- Minimises algal blooms
- Increases fish habitat
- Restores the condition of the degraded storage
- Drastically reduces energy and treatment costs
- Prevents autumn turnover

Artificial destratification involves mixing the water body to dissipate thermal layers, with the aim of achieving a uniform temperature and oxygen gradient over the depth of the storage.

The benefits are :

- Autumn turnover is eliminated and therefore anoxic and toxic water is prevented from mixing through the water column.
- Water is made to be of uniform quality and
- Cheaper to treat at the water treatment plant.
- Blue Green Algae is controlled and the use of dangerous chemicals eliminated.
- Metals such as manganese (Mn) and Iron (Fe) are oxidized out of the water.
- Fish habitat is increased.
- Cold water with low DO released from the lower levels of a dam, which can upset fish migration patterns down-stream is minimised.
- Ecological balance of a degraded storage is restored.
- Greenhouse Gas reduction



WEARS ResMix™ Australia Projects

Previous Project Examples

Toowoomba City Council

Dam Destratification & Water Quality Management System.

Tweed Shire Council

Dam Destratification & Water Quality Management System.

Swanbank Power Station

Cooling Tower Water Reservoir Project

Coonabarrabran Shire Council

Design Construct Install and Monitor Destratification Project

Orange City Council

Blue Green Algae Minimisation Project

WEARS Australia

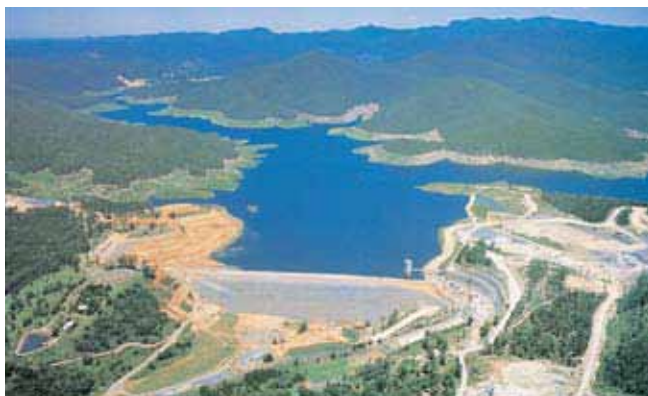
Reservoir Destratification
Research on Metallic Ion Removal
Controlling Cyanobacterial Blooms

Taree Shire Council

Off-Line Storage Algal Control and Destratification Project

ACTEWAGL

Googong Dam BGA Control
Cotter Solar Manganese Reduction



Process and Operations

- Process investigations
- Concept and detailed design of water and waste water treatment processes.
- Removal of algal toxins, taste and odour compounds from drinking water.
- Project management & commissioning.
- Operations management.
- Operations advise and training.
- Industrial water and wastewater process engineering.
- Management of water catchments and water storage destratification systems.
- Community consultation.

Engineering

- Civil, structural, mechanical, and electrical design.
- Conceptual, process, detailed design and prototype development.
- Project and contract management.
- Construction management.
- Water and wastewater system modelling.
- Environmental impact assessment.

Laboratories

- Model studies and analysis.
- Materials engineering.
- Water quality programming.
- Computer aided drafting & modelling.
- WEARS has available to it one of the most modern hydrahualic engineering labs in Queensland.
- Sampling services.

WEARS Awards

Performance has been recognised when the company received the:

- Institution of Engineers Australia Engineering, Excellence Award, for outstanding achievement in engineering, usefulness, concerns for human and natural environment and benefit to the community.
- The National Engineering Award for engineering excellence for the control of metallic ions in potable water supply;
- Inducted into the exclusive Australian Engineering Achievers Group;
- The Queensland Heritage Award;
- ISO Award for import technology replacement.
- Clunies Ross National Science and Technology Award



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MEMORIAL FOUNDATION



THE INSTITUTION OF ENGINEERS, AUSTRALIA



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