

# Simplifying Water Treatment

## Products and services for a greener environment

Helping you with sustainable, responsible and cost-effective solutions

**Airborne dust particles can be difficult to control due to the fact that they are so small in size (0.1 to 10 microns).**

These particles drift everywhere and can be a significant health hazard. Engineers often correctly look to control the problem by spraying water mist to capture the dust particles, but it is not always that successful. This is because large droplets (80 to 100 microns) will travel through the air and collide with very few particles on the way.

The air stream traveling around the much larger droplet deflects the dust particle away from the droplet, thus avoiding collision. To effectively capture dust particles, the water droplets should be the same size and weight as the dust particles. Aqua Mist was specifically designed for this purpose.

The following areas will benefit from Aqua Mist and a high pressure misting system to suppress dust:

- Underground mining
- Crushers
- Conveyor Transfer Points
- Ore and Product Dump Areas
- Screens and Screening Rigs



Aqua Mist will increase the wetting properties of water in a misting or spray system.

### UNDERGROUND DUST TESTS

Tests conducted by the South African Chamber of Mines at their facility in Donkerhoek outside Pretoria, illustrated a marked improvement in the ability of water to capture dust particles of all sizes when treated with Aqua Mist.

BHP Billiton recently completed an eighteen month intensive underground study producing exceptional results. All results with Aqua Mist in underground mining dust control systems produced readings well below the government legislative targets of less than 3mg/m<sup>3</sup>

BEFORE	Area 81	82	83	85	Avg
(mg/m <sup>3</sup> )	3.74	3.39	3.26	3.20	3.40
AFTER	Area 81	82	83	85	Avg
(mg/m <sup>3</sup> )	1.66	2.31	2.55	1.03	1.89



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H<sub>2</sub>O + IQ

## VERIFICATION

Various tests with Aqua Mist have proven that gasses (CO<sub>2</sub>, SO<sub>x</sub>, and NO<sub>x</sub>) can be captured into water at an effective rate of up to 85%. This has not previously been accomplished and offers an effective solution for carbon-capturing and could offer a solution to the problem of global warming.

## CARBON SEQUESTRATION vs STORAGE

It is important to note that our unique technology and focus is primarily directed in providing a solution for Phase 1 (Capturing CO<sub>2</sub> into water from industrial emission stacks) of the process, where there are currently no real commercially viable solutions to carbon capturing.

There are many existing solutions for Phase 2 (Cleaning water) and Phase 3 (removing CO<sub>2</sub> from water) which are already commercially available and we can choose which technology to employ in those phases. The most effective way to bind carbon is to employ nature in the form of Algae.

Biofuel from algae is a viable alternative to fossil fuel due to the following advantages:

- It's carbon-neutral
- Algae only requires water, sunlight and CO<sub>2</sub> to grow rapidly
- It's readily convertible to fuel
- It's low-cost, low-input feedstock
- It's high oil content
- It's rapid reproduction; highly energy efficient
- Microalgae are the second fastest growing form of biomass, converting as much as 7% to 8% of the Sun's energy to biomass
- It is produced on non-arable land



South Africa ranks 12th on the list of the world's biggest greenhouse gas (GHG) emitters. South Africa is the only African nation among the 20 countries that together emit nearly 90 percent of the world's greenhouse gases.

## ALGAE RESEARCH

WET has partnered up with Exxaro and the University of Pretoria to research algae that will sequester quicker, rather than the trend to find algae with high lipid (oil) content.

Our water containing carbon is the medium which is best suited for growing algae and algae producers worldwide are struggling to increase their production precisely due to their inability to provide carbon to the algae in an effective manner.

