



Level



Pressure



Flow



Temperature



Liquid Analysis



Registration



Systems Components



Services



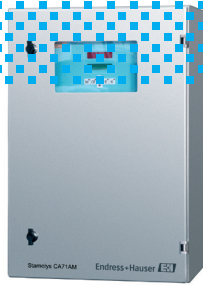
Solutions

# CA 71 Ammonia Measurement in Reclaim Water- Power

CA 71 Ammonia Analyzer is used in reclaim water from treatment plant to power station cooling water



Wastewater treatment plant



Stamosens CA71 Ammonia analyzer



Typical power plant

**Many utilities are finding new markets for treated wastewater, also known as “reclaim water”. Reclaim water has been used in the past, mostly for golf courses and agriculture. Now, with drinking water being a precious commodity, more utilities are switching to this new source in order to conserve the potable water for the public.**

## Customer profile

A major power utility in Colorado made a decision to use reclaim water from its Las Vegas wastewater treatment plant as cooling water for the power plant. Because 90 to 95% of the water is used for cooling, this saved an average of 30 million gallons per year of drinking water.

16” pipes from the treatment plant to the power plant carry the reclaimed water. The water is circulated through plant pipe works which cool bearings, generators and other moving parts. The heated water is then sent to the cooling towers for heat transfer.

## Application description

Reclaim water is used in power plants and presents a special problem because the water needs to be treated at a higher level to remove minerals and solids that could destroy power plant machinery and pipes.

The ammonium content of the water had to be near zero for use in the cooling towers and heat exchangers. Water containing ammonia, particularly in the presence of oxygen, readily attacks copper and copper bearing alloys. This is commonly referred to as “yellow metal attack” by power plant personnel.

Ammonium can also effect the disinfection of cooling water in a negative way. Free ammonium in the tower will combine with the chlorine based disinfection chemicals added to form chloramines. This type of chlorine is much less effective as a biocide than the free chlorine formed in the absence of ammonium.

To accomplish ammonium removal, the water treatment plant uses a feed forward control scheme using the CA71 analyzer to control dosing for “break point chlorination”. By maintaining the chlorine to ammonia content at an 8:1 ratio, the ammonium is eliminated, along with the negative effects on the plant cooling water system.

## Application challenges

The ammonium content within the reclaim water will vary with the time of day, temperature and seasons. Therefore the analyzer must measure accurately at low and

high concentrations to control the dosing of chlorine (see graph on back page).

## Results

The CA71 ammonia analyzer accurately measures at low and high concentrations to control the dosing of chlorine. The utility has been able to achieve the break-point chlorination utilizing the feed forward control. The analyzer has been maintenance free, and given extremely accurate results compared to lab samples.

## Instrument description

The CA71 ammonia analyzer is a simple, compact analyzer for ammonium measurement in sewage treatment plants, drinking water, and in industrial water treatment. The analyzer uses the “Colorimetric” Indephnenol Blue Method, according to ISO 11732 to give very accurate results with low maintenance.

Range: 0 to 15 mg/l of  $\text{HN}_4\text{-N}$   
Output: 4 to 20 mA  
Data logger: Last 1000 measurements

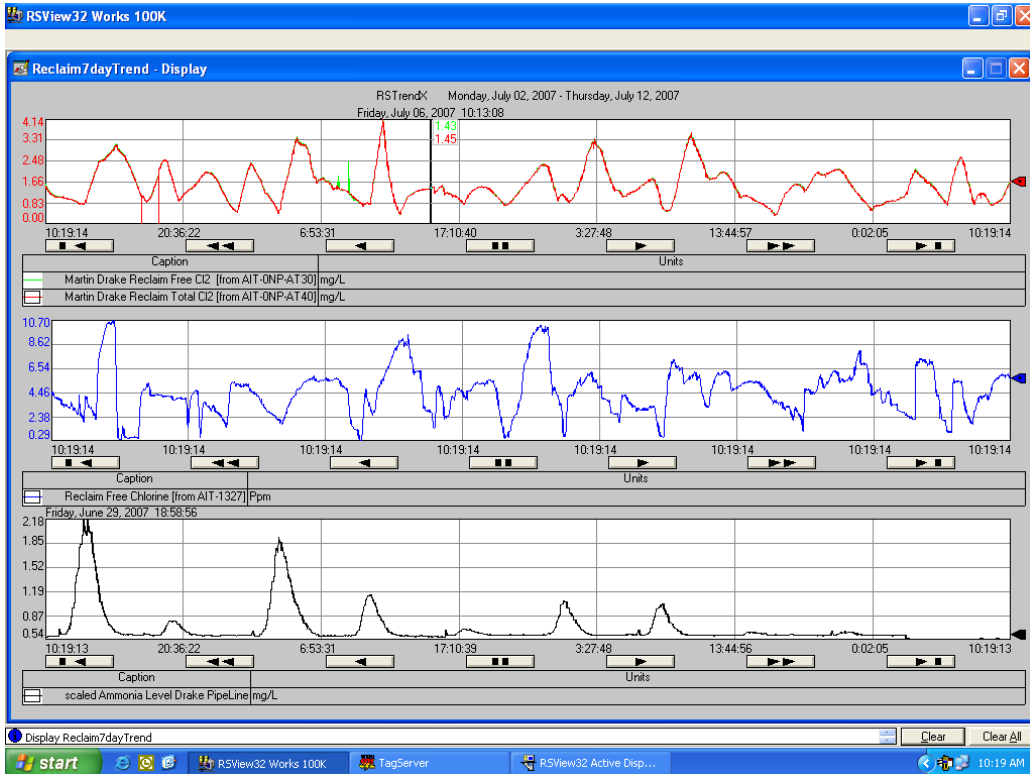
Automatic cleaning and calibration cycles are included

For more information, contact  
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The presence of ammonium in water can be due to several factors, one of which is the biological decomposition of organic nitrogen. The chemical balance between ammonium vs toxic ammonia can shift with changing pH values. Natural bodies of water do not normally contain any ammonia. Thus, higher concentrations occurring in drinking water indicate the presence of wastewater or possibly fluids which leached from a landfill.

Bacteria in water use oxygen to convert ammonium to nitrites, which are then further oxidized to nitrates. The oxygen balance of a body of water is therefore affected in a powerful way.

It is more expensive to convert reclaim water into drinking water than to treat it to non potable standards. Money and drinking water are saved, allowing any city to serve it's growing population.



ISO 9001:2000 Certified

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