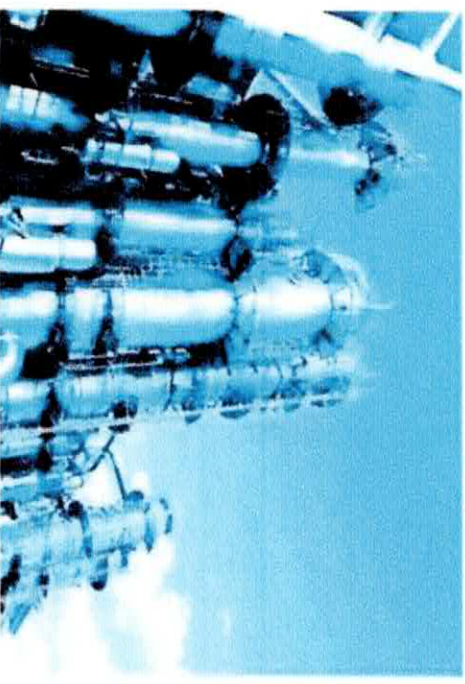


## Chemical Industry

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The chemical industry consists of companies and other organizations that develop and produce industrial chemicals, specialty chemicals, and other chemicals. It converts raw materials (oil, natural gas, air, water, metals and minerals) into bulk chemicals for industrial and consumer products. It includes the petrochemical industry, such as plastics polymers and synthetic fibers; inorganic chemicals such as acids and alkalis; agrochemicals such as fertilizers, pesticides, and herbicides; and other categories such as industrial gases, specialty chemicals, and pharmaceuticals.

Chemical plants need to heat or cool raw materials during the production process. NAWT quantum collars have provided solutions to hundreds of chemical companies to ensure smooth water circulation in cooling and heating systems.



## CASE STUDY

### Chemical Plant



#### **Pain Points:**

The land at the location is a saline-alkali land. The water in the water source is highly saline and alkaline and highly corrosive. The corrosion and scaling of the heat exchange equipment are very serious, and the maximum lifespan is only 3 years. Within 3 months, some parts of the pipe were completely corroded. Hope to solve the corrosion and scaling problems of two parallel ethanol coolers

## Installation:

The customer decided to do a comparative test. The same two ethanol production lines were connected with two heat exchangers in parallel for comparison.



## Effect of Use:

The test period is from the date of installation until one of the heat exchangers no longer functions properly. After 43 days of waiting, the heat exchanger without the quantum ring is completely unusable. When the equipment is opened, there is almost no scale in the pipes with the quantum ring installed, and the pipe of the equipment without the quantum ring are almost blocked by scale.



The pipe of exchanger without quantum ring



The pipe of the exchanger with quantum ring

## Summarize

NAWT quantum collar can improve the corrosion resistance of circulating pipelines to high-salt-alkali water. This is mainly because under the action of quantum collars, a stable protective layer will be formed on the surface of the pipeline. Improving the scale inhibition capability mainly increases the concentration ratio of circulating water, so that the equipment can operate normally even in high hardness environments.

## Pharmaceutical plant



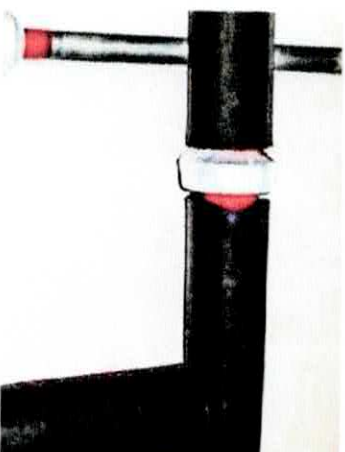
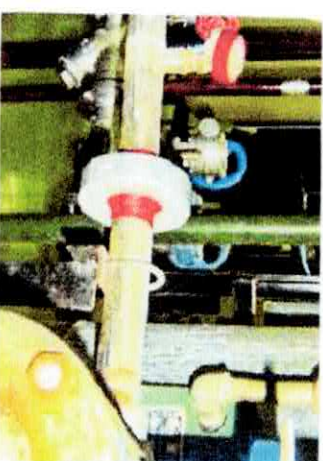
1. There is a 100-mesh primary filtration device at the front end of the ultrafiltration device of the pure water system. There is a three-ton water storage tank at the front end of the primary filter. The raw water is deep well water, and the water tank often contains yellow slime and suspended solids. The primary filter mesh is often clogged due to the growth of biofilms and must be shut down for cleaning in 2-3 days. It also needs to be cleaned with a metal brush, which is difficult to clean. Replacement of the primary filter is frequent and expensive.
2. The water quality is relatively hard, and the cooling circulating water and pharmaceutical process water are severely scaled, making system maintenance difficult and seriously affecting production.

## Installation:

For the primary filtration system: installed a 1.5" quantum collar at the front end of the raw water tank of the system to solve the problem of biofilm in the primary filter.

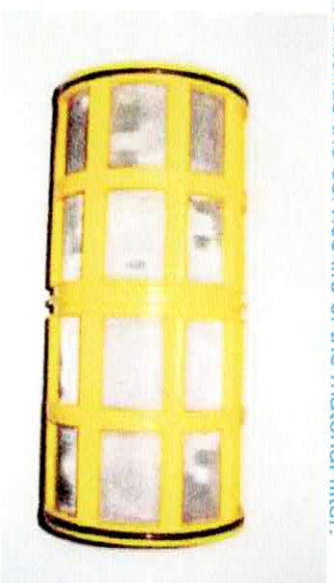
For water quality treatment: A 3" quantum collar was installed two meters behind the water tank motor, and a 1.25" quantum collar was installed on other pipelines and two meters downstream of the water tank microcirculation motor, solved the problem of algae in water tanks and improve the quality of raw water.

For the hot water circulation system: one 5" quantum collar was installed at the front end of the heat exchanger circulation pump, and two 6" quantum collars were installed at the back end. The raw water of the other hot water system was replenished. A 3" quantum collar is installed on the hot water inlet pipe of the tank to solve the problem of serious scaling in the hot water circulation system.

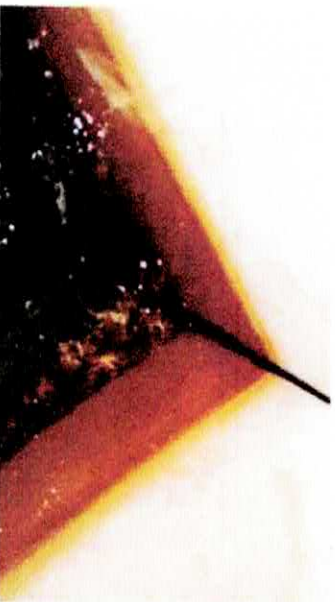


## Effect of Use

1. After installation - Primary filtration system: cleaned every half month, there arent any biofilms, only suspended matter is intercepted on th primary filter. East to clean, just rinse with water, no ore brushing required. This extends the service life of the material filter.



Hot water system: The original scale has fallen off, which improves thermal efficiency and saves maintenance labor costs and time costs. There are no traces of original algae on the wall of the water tank, improving the quality of circulating water.



## Summarize

The effect of NAWT quantum collar is better than that of nanomembrane. The filter element does not need to be replaced at all. The filter element saves \$20,000 per year. Taking into account the maintenance cost and time cost of manual cleaning, the over all cost savings is about \$40,000 - 50,000 a year.