



## Jianshan Waste Water Treatment Plant controls the nitrogen removal process and optimizes the carbon source dosage

### Waste Water Process Monitoring

The s::can system enables the operator to control the nitrification and denitrification process accurately, and to control the aeration as well as carbon source dosage to optimize operating costs.

### Jianshan WWTP



### Parameters monitored:

- TSS
- NO<sub>3</sub>-N
- NH<sub>4</sub>-N
- pH
- ORP

### Facts & Figures

**Company/Institution:**  
Zhejiang Jianshan WWTP

**Location:**  
Jiaxin, Zhejiang Province, China

**Application:**  
Waste Water

**s::can Partner:**  
Shanghai Asaint Environmental Company

**Key Products installed:**  
nitro::lyser, ammo::lyser, redo::lyser, con::cube

### Background

According to China's "12th Five-Year Plan" requirements, wastewater treatment plants should meet the discharge standard of pollutants for municipal wastewater treatment plants (GB18918-2002) level A. The Jianshan WWTP did not fulfill these requirements. Its discharge standard was level B, due to a missing Nitrogen removal process and thus the Total Nitrogen concentration was too high.

As a result, Jianshan WWTP added a nitrogen removal process. This project was part of a 3 Billion RMB (382 million €) Key Emission Reduction project for Jiaxin in the 12th Five-Year Plan.

### s::can's solution

In order to control the Nitrogen removal process and to optimize operation costs, s::can's sales partner Asaint installed a nitro::lyser, an ammo::lyser and a redo::lyser for online monitoring in four SBR tanks.

Key parameters are TSS, pH, NO<sub>3</sub>-N, NH<sub>4</sub>-N and ORP. This enables the operator to control the nitrification and denitrification process accurately, as well as to reduce the costs of aeration and carbon source dosage. The system is equipped with automatic compressed air cleaning.

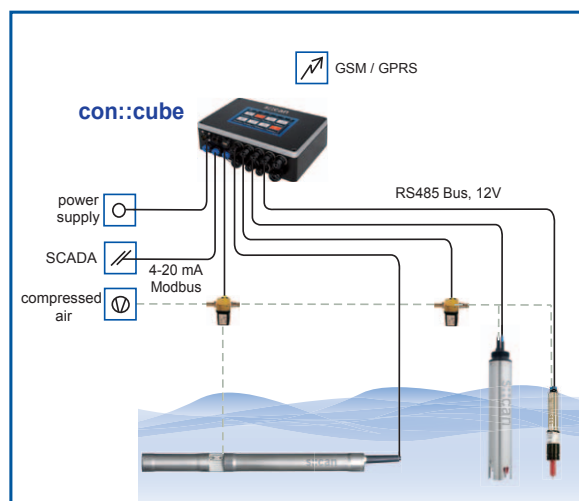
### Benefits

Jianshan WWTP treats a combination of industrial and municipal waste water for the city of Haining. After this addition, the WWTP now covers an area of 143 acres, with a total investment of 117 million RMB (15 million €) and a daily processing capacity of 100.000 m<sup>3</sup>.

After the completion of the project, COD emissions decreased from 3.650 t/a to 1.825 t/a and NH<sub>4</sub>-N decreased from 365 t/a to 182 t/a, a reduction of 50% for both parameters.

Total Nitrogen (TN) concentration in the

effluent decreased to < 15 mg/l. The lower concentration loads helped to improve the quality of the Qiantang River remarkably and became a showcase for upgrading other WWTPs.



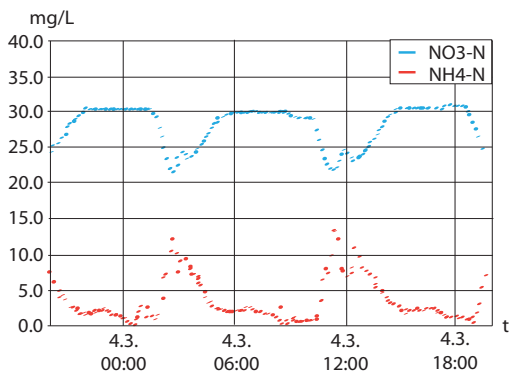
**“Using s::can Online Monitoring Systems, we are able to get the NO<sub>3</sub>-N, NH<sub>4</sub>-N and ORP values in real time. Nitrification and denitrification processes can be controlled perfectly. Operating costs are minimized by optimizing the dosage of carbon source and air supply.”**

Wei Ma,  
Operating Manager of Jianshan WWTP

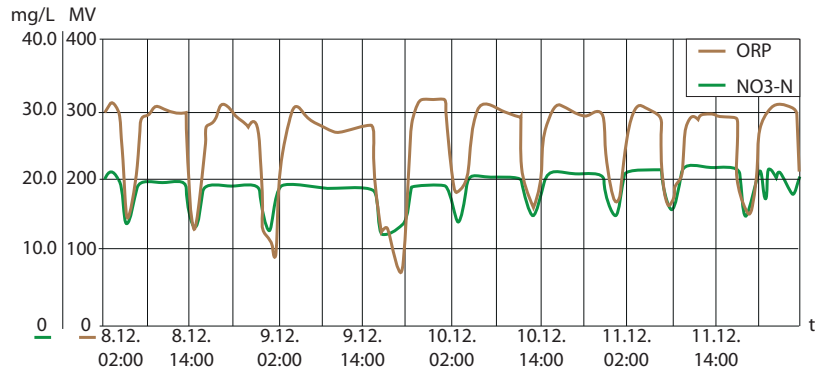
**Process Schematic**



**Measurement of NO<sub>3</sub>-N and NH<sub>4</sub>-N**



**Measurement of NO<sub>3</sub>-N and ORP**



The nitro::lyser™ is a fully submersible UV/Vis spectrophotometer which measures light absorbance between 190 – 750 nm. s::can's specialized proprietary algorithms analyze and decompose the spectral data to provide measurements for many important wastewater parameters including Nitrate and TSS.



The ammo::lyser pro is a fully submersible ISE probe with built in potassium, pH & temperature compensation. It is a multi-parameter probe that utilizes a unique, non-porous/nonleaking reference electrode for technically unrivalled & consistent performance. There are no moving parts in contact with the water & no reagents are used.



The con::cube is a compact, versatile terminal for data acquisition. Integrating the newest processor technology, the con::cube has very flexible options for interfacing with SCADA or any other central database system, providing a perfect solution for station control.