Sales Application Note

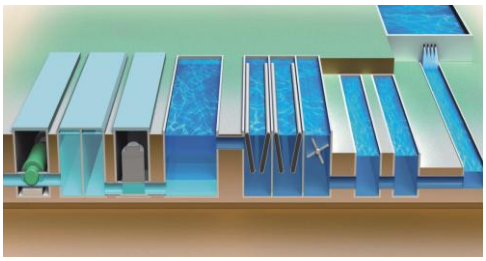
Waste Water Treatment

APPLICATION

Even recent trends in the developed world have been to minimize the production or recycle the waste within the production process; most industries produce some wet wastes. These industries are related to iron and steel, mines and quarries, food, pulp and paper, etc. Wet wastes are treated in same plants where they are produced or sent to wastewater plants.

APPLICATION REQUIREMENTS

Wastewater plants can be divided into three main treatments or processes. On the primary process, wastewater is cleaned from solids, larger objects and heavy particles. This cleaning process is done by means of bar screens, sand & grit removal system and primary clarifiers. Motors are placed in bar screens to control up-and-down movement, in sand & grit to control blowers, and in primary clarifiers to move mixers.



Secondary process consists in a denitrification and nitrification of the water by means of surface mixers and aeration and gravity settling in different tanks by means of pumping.

Finally, the tertiary treatment consists of filtration, chlorination and dechlorination steps. Those are chemical processes, and water is pumped from one to other. In parallel, the sludge, which is collected from primary and secondary treatments, can be dewatered and recycled for other uses by means of different steps like anaerobic treatments, centrifuge and belt filter press.

FUJI ELECTRIC SOLUTION

Fluctuations in flow can interrupt a process control. This increases costs and reduces equipment's lifetime due to higher number of starts and stops, and adversely affects the process quality. On the other hand, even not interrupting wrong flow can decrease process efficiency, which leads to loss of money. FRENIC-AQUA is the proper inverter specially designed for pumps, blowers and other related equipments. It will radically improve the efficiency of process controls and result in reducing energy consumption. FRENIC-AQUA can also provide tighter control on chemical feed pumps, mixers and other equipments.

ADVANTAGES OF FUJI ELECTRIC SOLUTION

- Full power range with 3-phases 400 VAC power supply from 0.75 to 710 kW. Built-in EMC filter, DC-reactor and IP55 enclosure available on capacities from 0.75 to 90 kW.
- As standard, FRENIC-AQUA complies with level 3C2 according to IEC 60721-3-3.
- Multifunction LCD keypad with multiple user units built-in
- Eliminates water hammer through soft starting and stopping the motor.
- Helps to clear blockage of impellers automatically by reversing the rotation by means of Anti Jam function.
- 4 PID controls for internal and external processes.
- Automatic energy-saving operation (Energy-saving operation according to load).
- No heater required thanks to condensation prevention function.
- Pick-up operation and filter clogging prevention for blower protection.
- Pressure sensor disconnection detection.
- End of Pump Curve to detect breaks and leakages.
- Motor alternation prevents the pump from sticking. Additionally, an internal timer assures equal usages of pumps.
- "By-pass" sequence integrated.
- Several field buses available for remote control and monitoring:
  - Built-in: BACnet MS/TP, Modbus RTU, Metasys N2
  - Optional: LonWorks, Ethernet, Profibus, DeviceNet, CANopen, CC-Link