PROVIDING SOLUTIONS TO TODAY’S WATER TREATMENT CHALLENGES

ADVANCED TECHNOLOGIES FOR TREATING INDUSTRIAL WATER AND WASTEWATER
Knowing is not enough; we must apply. Being willing is not enough; we must do.

LEONARDO DA VINCI
HYDROTECH ENGINEERING: KNOWLEDGEABLE, FLEXIBLE AND SPECIALIZED

Hydrotech Engineering is headquartered in North Eastern Italy’s industrial corridor. Starting in 2001 our company has experienced unparalleled growth focusing on international markets. The prerogative of the company is to design, manufacture, install and manage its installations. In less than 15 years our customer portfolio boasts numerous Fortune 500 companies.

Hydrotech Engineering realizes advanced water treatment plants for the treatment of process and waste waters utilizing the most advanced semi-permeable membrane and biological technologies for water recycling and reuse.

SERVICE OFFERING:

ENGINEERING
SKILLED MANUFACTURING
INSTALLATION/COMMISSIONING
TRAINING
AFTER-SALES SERVICE

since 2001
Today, our global team coordinates its efforts between the headquarter office in Italy and the sister companies in Asia and North America. Hydrotech Engineering takes no shortcuts. In a world where outsourcing is replacing trusted relationships between suppliers and partners, Hydrotech Engineering goes the extra mile.
The production process at HT began long ago. From the design of treatment processes, to engineering development and construction; every step is directly executed in our workshop. Continuous testing through onsite pilots and our advanced laboratories have allowed for perpetual fine-tuning. Our highly experienced technicians continue to improve the production processes and the quality of our machines. This is achieved by acknowledging the needs and the feedback from our clients. Another core differentiator is our focus on the automation, the control plants and their consequent energy efficiency. For this reason the design, construction and development of all automation components including control software of the installations are developed exclusively in-house.
WASTE WATER TREATMENT AND RECOVERY:
- Reverse osmosis
- Ultrafiltration
- Membrane biological reactor (MBR) & anaerobic membrane biological reactor (AnMBR)
- Biological treatments
- Flotation

SEA WATER DESALINATION:
- Reverse osmosis (Ultrafiltration pre-treatment included)

DRINKING WATER TREATMENT:
- Biological filtration for iron, manganese and ammonia removal
- Reverse Osmosis
- Nanofiltration
- Ultrafiltration
- Multi media Filtration

INDUSTRIAL WATER TREATMENT:
- Reverse osmosis
- Electrodeionization
- Ion exchange resins: co-current and packed bed process
- Mixed bed ion exchange resins
- Ion exchange softening
- Nanofiltration softening

BIOLOGICAL PROCESSES:
- Membrane biological reactor (MBR) & anaerobic membrane biological reactor (AnMBR)
- Moving bed bioreactor (MBBR)
- Sequencing batch reactor (SBR)

SPECIAL APPLICATIONS:
- Digestate treatment from biogas production
- Zero Liquid Discharge - Textile
- Landfill leachate treatment
LEADERS IN PURIFICATION

CASE STUDY: DIGESTATE FROM ANAEROBIC FERMENTATION FROM BIOGAS PRODUCTION

Anaerobic digestion is a biological process by which the organic matter from various origin is turned into biogas for energy production. This energy production process generates a residual product called anaerobic digestate. The characteristics of this residual product are: organic matter difficult to biodegrade, high presence of suspended solids and an elevated nitrogen concentration.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>COD reduction</td>
<td>99.8 %</td>
</tr>
<tr>
<td>TS reduction</td>
<td>99.5 %</td>
</tr>
<tr>
<td>TKN reduction</td>
<td>99.4 %</td>
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<tr>
<td>Recovery up to RO only</td>
<td>75.0-80.0 %</td>
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</tbody>
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Hydrotech Engineering uses the most modern technologies in the field of semipermeable membranes which allow the removal and recovery of nitrogen present in digestate. In addition, high quality water is obtained which can be reutilized in the industrial process or discharged in accordance to the most stringent environmental regulations.
THE PROCESS

Hydrotech Engineering has developed a multi-step process to treat digestate in the most efficient method. Our process encompasses the following steps: MBR, side stream Ultra Filtration and double stage/double pass Reverse Osmosis.

STREAMS GENERATED BY OUR SOLUTION

• 80% pure water which meets all discharge limits. Example: COD levels up to 10ppm. Clients reutilize this rich source of pure water for their industrial needs on site.
• 20% Reverse Osmosis concentrate that can be either evaporated into an organic fertilizer or utilized in the humidification process for compost production.

OUR NUMBERS

Since 2009 Hydrotech Engineering is the only company to have over 10 installations in operation treating digestate from anaerobic fermentation. Together, our customers produce over 35 MW of power. These customers are able to efficiently treat digestate and monetize from its valorization.
CONFIDENCE FROM ACHIEVING OPTIMUM RESULTS

CASE STUDY: ZERO LIQUID DISCHARGE TEXTILE

Example application: Textile Industry Water Reuse is a fundamental component in the battle for sustainable & integrated water resource management and water supply alternatives. The textile industry was the first to have embraced our Zero Liquid Discharge technology.

TECHNOLOGY CAPABILITIES
Today, Hydrotech Engineering is the leading company in this field providing total effluent recovery. The companies using our technology in India, Pakistan and Bangladesh supply the top 5 global retailers with their fabrics, garments and household textiles.

ENVIRONMENTAL BENEFITS
By implementing our Zero Liquid Discharge technology our customers are reutilizing on a daily basis over 100,000 m³ of their effluent generated in the manufacturing process instead of discharging into local waterways.

ECONOMIC BENEFITS
From a competitive advantage standpoint, our customers benefit from having the lowest industry running costs. On average our technology utilizes 45% less to operate and manage than the competition making Hydrotech Engineering Zero Liquid Discharge the most competitive technology today.

Our technology is modular enabling plants large and small to achieve ZLD. Currently, our customer portfolio ranges from treating 50-1000m³/h.

To learn more about Hydrotech Engineering please request an appointment by calling our office closest to your location.

| Recovery of multistage RO (reused water/inlet waste water) | up to 93.0% |
| Multi stage RO: highest energy efficiency | 1.50 kWh/m³ approx. for the entire recovery cycle up to the RO |
| Inlet Raw Water TDS | up to 10,000 ppm |
| Waste water from different Textile processes: no problem, we have been dealing with all of them |
EFFICIENT PROCESSES

CASE STUDY: PURE WATER FROM BRACKISH AND SEAWATER

The world’s shortage of freshwater is increasing on a daily basis. According to the United Nations by 2025 two-thirds of the world’s inhabitants will face water shortages.

97% of the water on earth is salted which is not usable for industry or agriculture. Using membranes’ desalination is an obvious solution to the lack of fresh water we face.

In this difficult scenario Hydrotech Engineering provides efficient and economical solutions. Today, Hydrotech Engineering utilizes advanced Reverse Osmosis desalination technology to transform brackish and seawater into safe, affordable water for drinking and industrial uses.

THE PROCESS

Hydrotech Engineering provides turnkey solutions utilizing membranes technology designed specifically for the characteristics of treating different types of water sources in the most cost-effective way. No project is the same. For this reason each customer is treated singularly and is provided with a tailored solution.

Should there be the need to produce water with the highest purity level, Hydrotech Engineering can utilize the electrodeionization technology (EDI) after the membranes. Thanks to this technology, that is not using chemical products (thus once again with a low environmental impact) we can produce ultrapure water for all the applications where water is required with extremely high characteristics, such as in the power and in the electronic industry fields.

• Customers receive integrated, high quality and consistent systems
• Modular designs adapt to site and project specifications for a unique solution
• Engineering and field services are available to design, commission, or start up systems
THE BENEFITS OF CONTROL AND CONTINUAL R&D

Hydrotech Engineering boasts of a state-of-the-art onsite laboratory enabling the company to be at the cutting edge of R&D. The team managing the laboratory constantly pushes the envelope to find new ways for optimizing our customer’s processes. Another benefit to having our own laboratory is the ability to eliminate wait time in finding resolutions for our projects. Hydrotech Engineering continues to invest in the future and is open to engaging with forward thinking, like-minded customers/companies.
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