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# Sustainable Innovative solutions for attaining Water Positivity & Carbon neutrality

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Zero Liquid Discharge Solutions

Conserving Resources, Preserving the Future.

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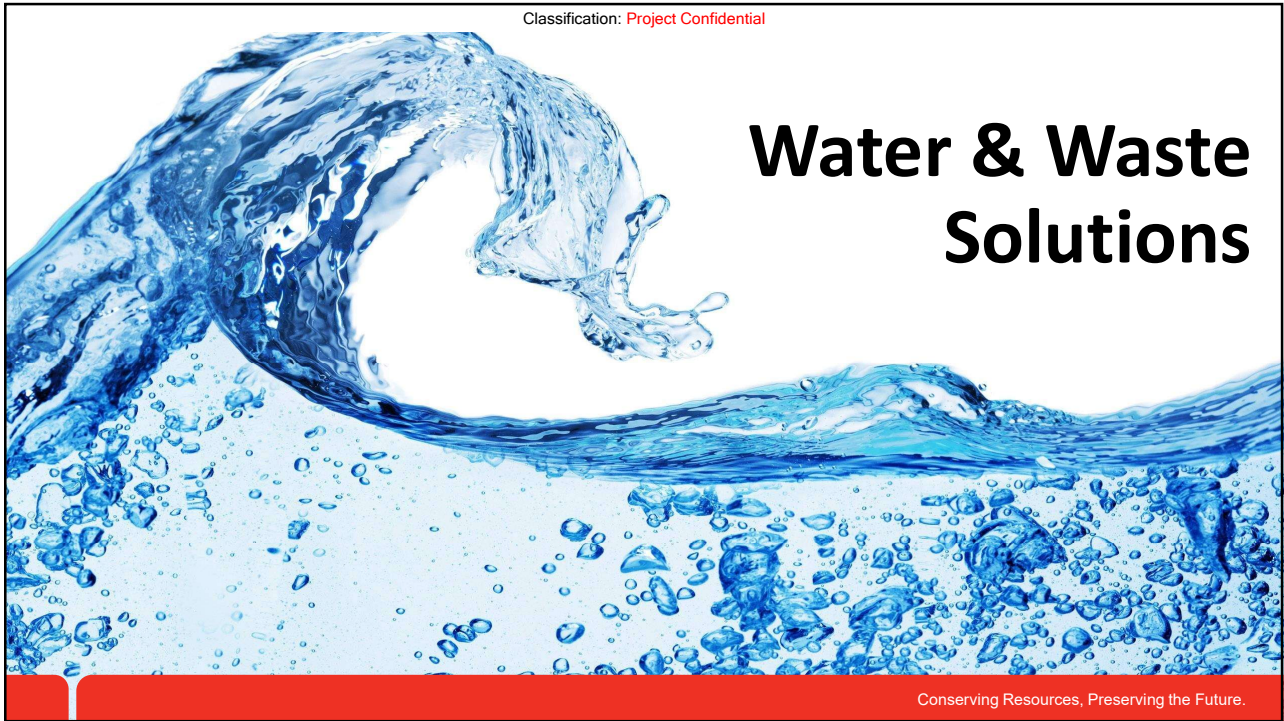


**Thermax at a Glance**

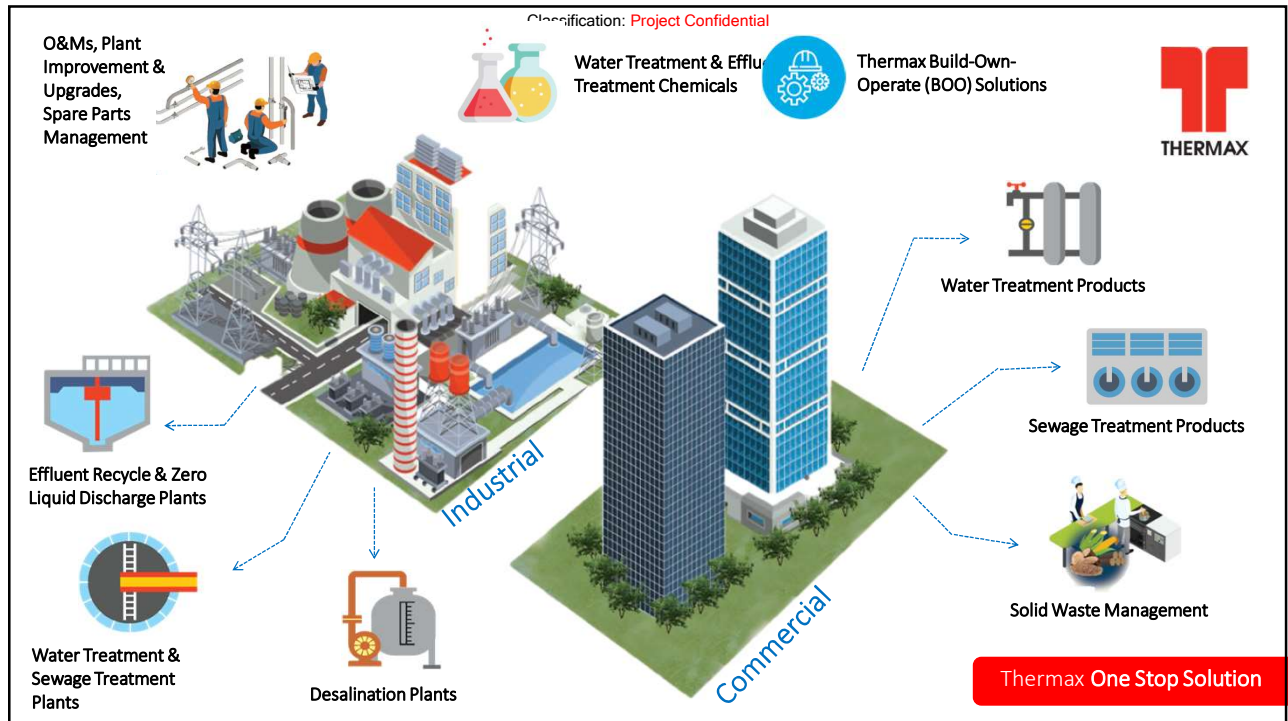
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## Business Insights

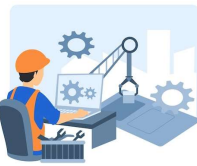


220  
Thousand  
m<sup>3</sup>/hr  
water treated



120  
Thousand  
m<sup>3</sup>/hr  
wasterwater recycled

In-house design,  
detail engineering,  
procurement, project  
management,  
construction &  
commissioning  
services



1<sup>st</sup>

In India to Install  
a Large-Scale  
**Desalination Plant**

In India to Install  
**Effluent Recycle & ZLD Plant**

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## Sustainable Water Solution for Food Sector



### Challenges

- Company's aim to achieve **water positivity**
- Ground water requirement of **7 ltr/kg of chips** production; increase in water production
- **High quantity & quality of effluent** is generated
- Difficulty in compiling the **PCB norms**



### Solution

- **Recycling the process** wastewater generated during the process
- Unique **combination of biological systems** with membrane systems
- **Less use of chemicals**; utilising the organic sludge for Biogas generation
- **Alternate source for Boiler** and cooling tower makeup is by 600 & 300 KLD water recycling system and 50 KLD MEE.

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# Sustainable Water Solution for Food Sector



## Results

- **1st in the world** novel solution and application
- Making the facility net water positive; **3.5 lacs litres of fresh water saved/day**
- **95-99% water in-house recycled**
- Fresh water requirement of 7 ltr/kg dropped down to zero, with condensate recovery
- Water availability for a **production increased to 5 times**
- **Zero water requirement for boiler & cooling tower** applications
- **Biogas production** for boiler feed; Minimising sludge generation by 60%
- **100% removal** of toxic compound like Acrylamide, Bromide & Colour
- Treated water meets **IS10500 / WHO drinking water standard**

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## Sustainable Impacts :



**3.5 lacs litres**  
of water saved per day

**90-95%**  
water in-house recycled

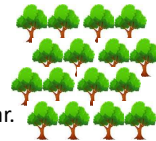


**60 Olympic sized swimming pool water saved per year**

**43**  
**tonsCO2e**  
saving in transportation  
of sludge yearly

**510**  
**tonsCO2e**  
saving reduced/year-  
pumping/Biogas

**10,400**  
Trees planted/year.




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# IOT, Big Data & AI as Levers for Smart Water Management



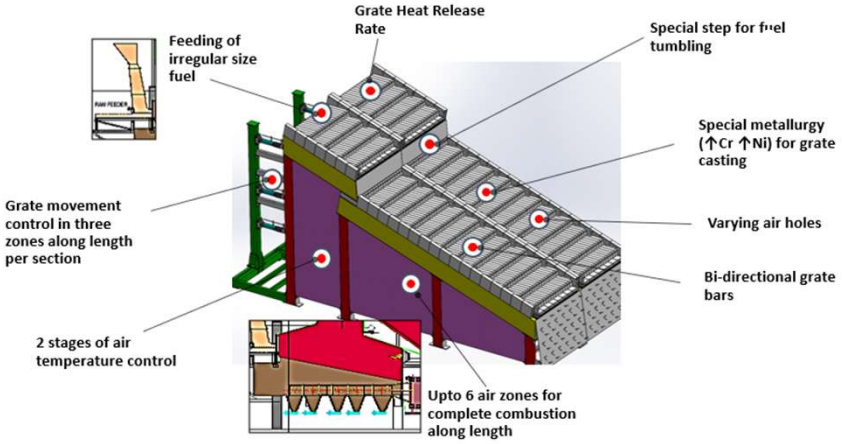
- Increases efficiency of water treatment assets.
- Early problem detection
- Optimised consumption
- Recover and reuse wastewater in sustainable fashion
- Make water management systems smarter
- Minimise human errors and intervention

[www.thermaxglobal.com](http://www.thermaxglobal.com)

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## TBWES Reciprocating Step Grate



The diagram illustrates the TBWES Reciprocating Step Grate system. It shows a cross-section of the grate with various components labeled: Feeding of irregular size fuel, Grate Heat Release Rate, Special step for fuel tumbling, Special metallurgy (↑Cr ↑Ni) for grate casting, Varying air holes, Bi-directional grate bars, Upto 6 air zones for complete combustion along length, 2 stages of air temperature control, and Grate movement control in three zones along length per section.

**Benefits of FlexiSource™**

- Safely utilise and dispose waste
- High flexibility to source green fuels
- Co-ordinated multi fuel feeding
- Reduce the overall carbon footprint
- Generated steam can be utilized for process
- Waste volume reduction up to 90%



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# Case Study – FlexiSource™



A typical image of multi-waste boiler

## Waste to Energy plant at Paper Mill in North India

**Fuel** – Multi-Waste Fuels like NRSW, RDF, Sludge, Biomass

**Boiler** - 1 X 40 TPH, 45 kg/cm<sup>2</sup>, 400 °C with iReciprocating technology

**FGCS** – Dry Type with PAC & Hydrated Lime dosing system

### Social Economic Impact

- 10+ Fuel** No single fuel dependency
- Upto 95%** Waste Volume Reduction
- 20+** Parameter Compliance to Emission Norms
- 52K+** Tons of coal Displaced
- 90K+** Tons of CO2 reduction
- 75K+** Tons of safe utilization of waste

### Meeting UN Sustainability Goals



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# WATER IS OUR WORLD



Thank You