

# CASE STUDY

## “SCALEBAN” ZLD PROJECT AT BIOCON BIOLOGICS, MALAYSIA

6 CLEAN WATER  
AND SANITATION



7 AFFORDABLE AND  
CLEAN ENERGY



13 CLIMATE  
ACTION



14 LIFE BELOW  
WATER



# SYNOPSIS

BIOCON Biologics, Malaysia Plant has achieved water conservation and ZLD (Zero Liquid Discharge) objectives with Unique, revolutionary , sustainable, “SCALEBAN” technology without implementing costly conventional technologies available globally.

## BACKGROUND OF “SCALEBAN” PROJECT

BIOCON is an Indian company and has a large insulin manufacturing facility in Malaysia. As per DOE (Department of Environment) norms in Malaysia, they were allowed to discharge only 400 m<sup>3</sup>/ day treated wastewater outside the plant after achieving discharge limit parameters, because of this restriction and variation in the raw wastewater parameters, they were not able to achieve their full production. Due to this serious issue they were searching for technologies to recycle their 400 m<sup>3</sup>/day wastewater within the plant to utilize optimum capacity of the plant.

## CHALLENGES FOR BIOCON

Due to variation in the wastewater parameters, No technology supplier was able to provide a solution to treat their wastewater, as all available conventional technologies are designed on the basis of fixed design wastewater parameters thereby recycling of wastewater project was getting delayed and affecting the plant production.

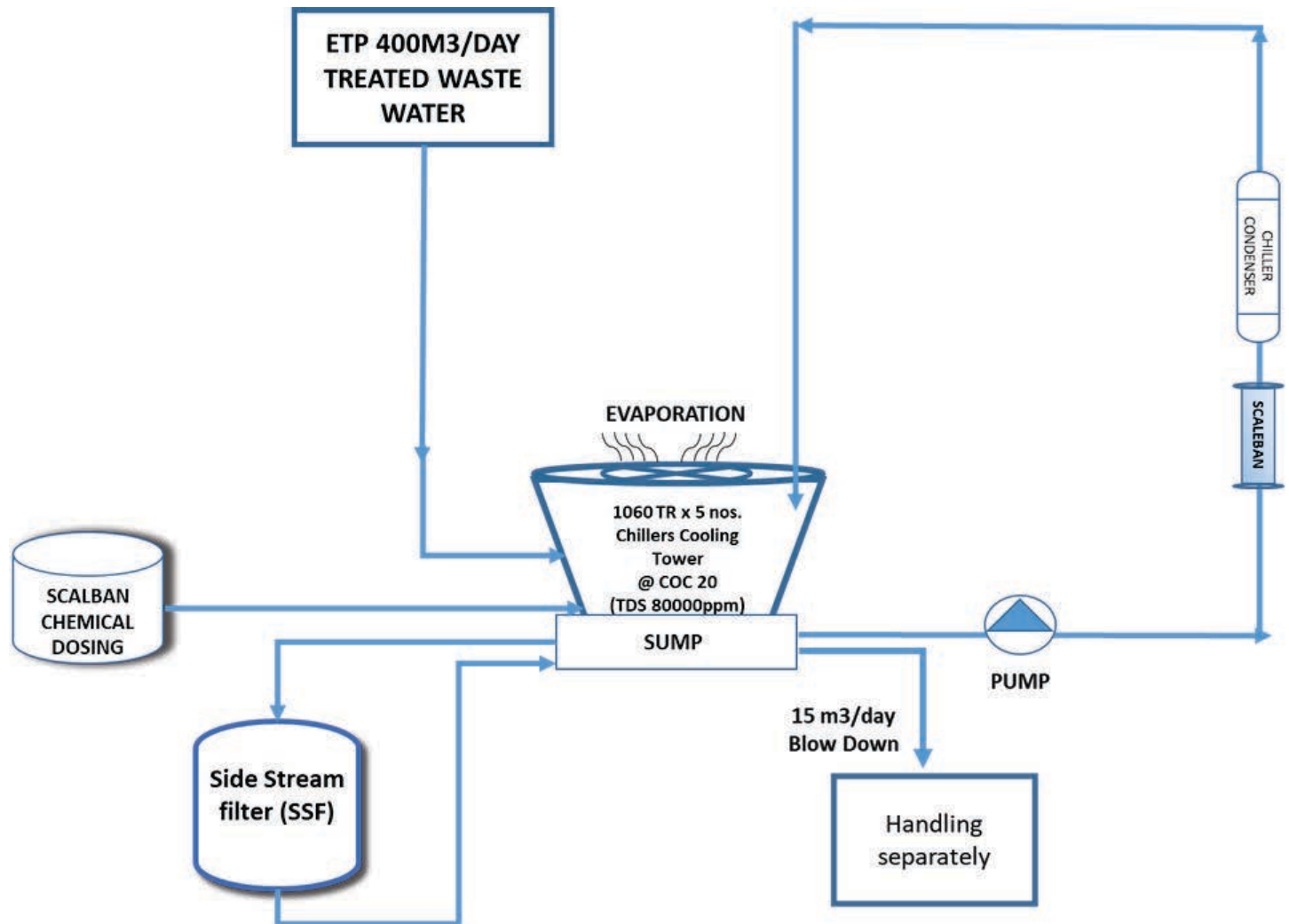
## BIOCON APPROACH

During this process of finding a right technology provider, they came across “SCALEBAN” Technology and discussed with our existing clients to gain the confidence on “SCALEBAN” technology.

After verifying the performance of “SCALEBAN” technology, BIOCON Biologics, awarded a contract to “Scaleban” to utilise their 400m<sup>3</sup>/day high TDS wastewater at 1060TR x 5Nos. Chiller Cooling Towers in place of fresh water for achieving water conservation and ZLD on a sustainable basis. This project was commissioned in the month of August 2021.



## "SCALEBAN" WATER CONSERVATION & ZLD SCHEME



## ACHIEVEMENTS OF THE “SCALEBAN” PROJECT FOR BIOCON

- Achieved water conservation and ZLD objectives on a sustainable basis.
- Saving in high CAPEX of MEE (Evaporator).
- Saving in high OPEX of MEE (Evaporator).
- 100% saving of fresh water consumption in cooling towers.
- Completed project in 7 weeks.
- Considerable reduction in Carbon footprint.
- High COC operations of the cooling tower.
- Substantial reduction in cooling tower blowdown quantity.
- Zero scale, corrosion and biofouling free operation of the entire cooling tower circuit including chiller condensers.
- Maintained chiller approach
- Saving in energy consumption
- No down time of the plant
- By implementing Scaleban technology Biocon contributed in achieving UN sustainable development goal no. 6,7,13,14





After successful operation of the “SCALEBAN” project, BIOCON awarded repeat order to “SCALEBAN” for their another facility in Malaysia to utilize 200m<sup>3</sup>/day utility RO reject in the Chiller and SRP Cooling Tower.

“SCALEBAN” technology is handling total 600m<sup>3</sup>/day wastewater in all the Cooling Towers successfully and achieving their water conservation and ZLD objectives on a sustainable basis ,also saving equal amounts of fresh water.

In the “SCALEBAN” process we are operating a cooling tower at very high COC (20-25) with wastewater and maintaining 80,000 ppm ;of TDS in cooling tower recirculation water and giving only 15 m<sup>3</sup>/day concentrated blowdown, which Biocon is handling separately.

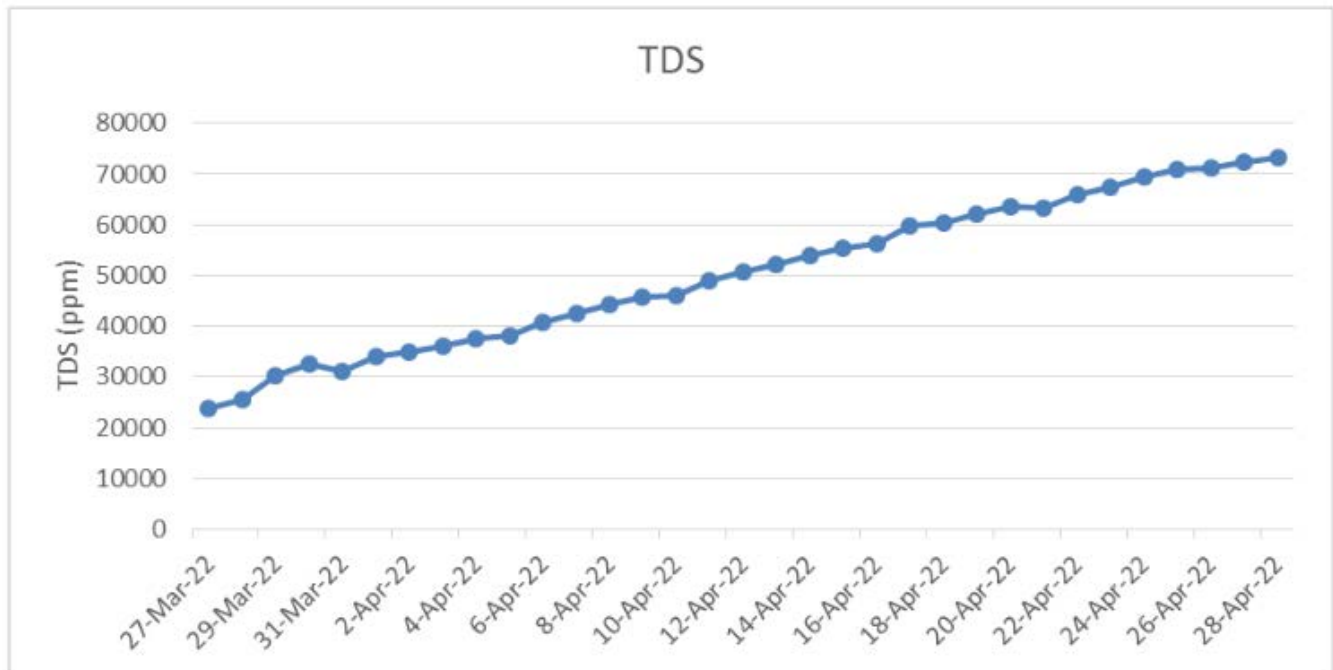
## DETAILS OF PROCESS PLANT COOLING TOWER

Particulars Details	Details
Application	Chiller Cooling Tower
CT Flow rate	3000 m <sup>3</sup> /hr.
Delta T	4-5 °C
Evaporation Rate	440 m <sup>3</sup> /day.
COC	20
Blowdown	15 m <sup>3</sup> /day
Total makeup requirement	455 m <sup>3</sup> /day.
MOC of Heat Exchangers tubes	Copper

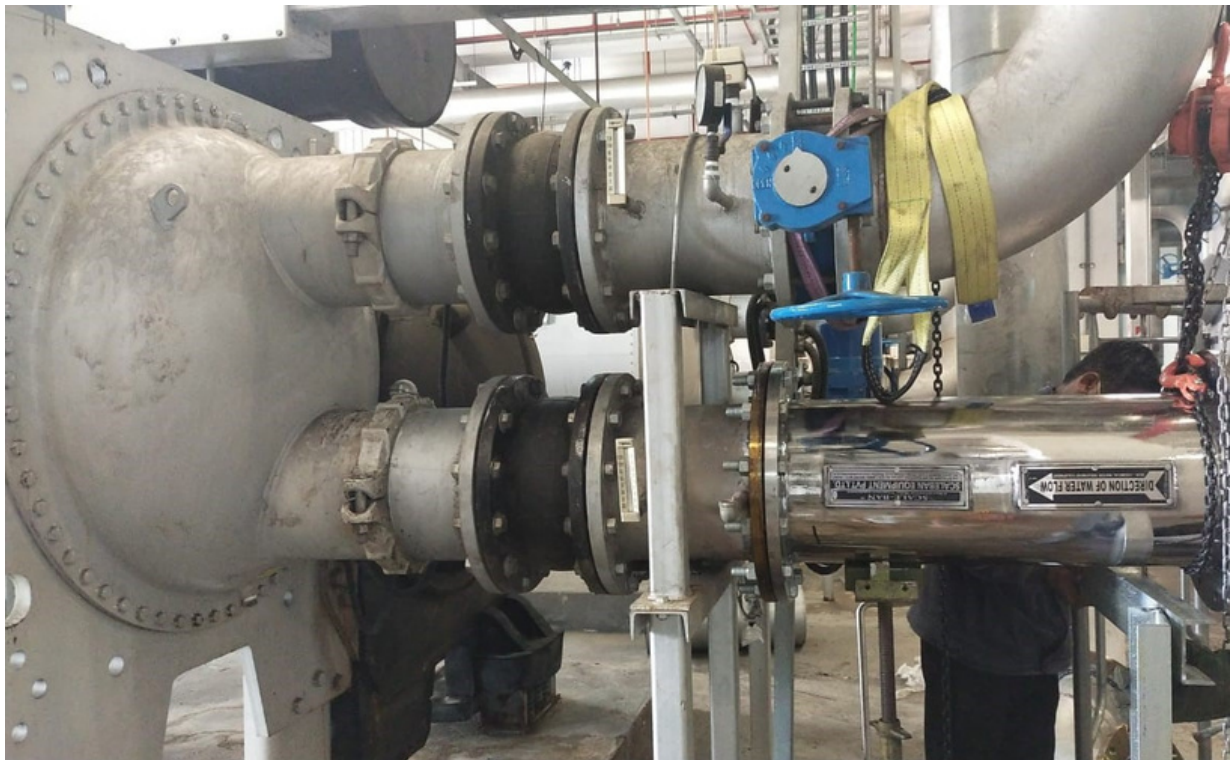
## PARAMETERS OF WASTEWATER (MAKEUP) / COOLING TOWER RECIRCULATION WATER

Type of Industry	Pharmaceutical		
Main Process	Fermentation		
Type of Effluent	ETP treated water		
Parameters	Wastewater/ Makeup water parameters	Recirculating water parameters	Unit
pH	6-9	7.5-8	-
TDS	4000	80,000	mg/l
TSS	50	200	mg/l
COD	400-1000	-	-
BOD	100-250	-	-
Chloride	400-500	10,000	mg/l
Sulphate	800-1100	22000	mg/l
Silica	8-10	200	mg/l

## CHILLER COOLING TOWER CIRCULATION TDS



## "SCALEBAN" INSTALLATION





## COOLING TOWERS USING WASTEWATER



## APPRECIATION OF "SCALEBAN" TECHNOLOGY AT BIOCON MALAYSIA



**We are thankful to BIOCON Biologics, Malaysia for implementing "SCALEBAN" Technology for achieving water conservation and ZLD objectives**