

# Miranda Wastewater Solutions for Hotels

## Robinson Club Maldives Case Study for Miranda STP System

### Hotel Design Data

Number of Guestrooms	: 250
Total Population	: 500 people
Water Usage for Capita	: 400 lt / person
Daily Wastewater Flowrate	: 200 m <sup>3</sup> /day
The Quality of Treated Water	: Irrigation
Water Supply	: Desalination
Area to be Irrigated (est.)	: 20.000 m <sup>2</sup>

**ROBINSON**®  
CLUB MALDIVES

In the majority of resorts and hotels wastewater is simply discharged...

Robinson Club recycles wastewater for Irrigation, benefits occur as outlined table on the right.



### Robinson Club, Maldives MIRACELL Wastewater Treatment System Feasibility Analysis

#### Past Status

Monthly Irrigation Water Utilized in Summer Season (m <sup>3</sup> )	6.000
Average Amount Paid for Irrigation Water (Dollar/m <sup>3</sup> )	2,25 \$
Monthly Water Charge (Dollar)	13.500 \$
Seasonal (6 Months) Water Charge (Dollar)	81.000 \$
<b>Estimated charge to be paid for water in 10 years (Dollar)</b>	<b>810.000 \$</b>

*(Annual inflation percentages have been taken into account in all the projected water charges)*

#### Status After Recycling of Wastewater with Miranda Wastewater Treatment System

Capacity of the WWTP (m <sup>3</sup> /day)	200
Monthly Capacity of the WWTP (m <sup>3</sup> /month)	6.000
Model of Miranda WWTP to be used: <b>MIRACELL</b>	400
Monthly Operational Charge of the WWTP (Dollar)	1.145 \$
Cost of Miranda WWTP & Seasonal Operation Cost (Dollar)	6.870 \$

**Estimated Plant and Operational Costs  
Projected for 10 years (Dollar):** 68.700 \$

**Plant Amortization Period (Month):** 15

**Savings To Be Gained From The Plant  
Operation in 10 Yrs. (Dollar):** 741.300 \$

\* Cost of concrete storage tanks are not included in the calculations

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## Operational Advantages

- Miracell is simple to operate
- Requires a short 1 day training
- Requires minimal maintenance by any person
- System start-up to produce satisfactory treated water within 2 weeks after installation.
- Easy sludge disposal at comfortable frequency.
- System can be serviced by Miranda through local representatives or any trained technical maintenance team servicing the hotel facilities.

## Miranda's Miracell Sewage Treatment System complements the hotel infrastructure by:

- Assisting the hotel to conserve water.
- Save significant amounts from the annual water expenditures.
- MIRACELL sewage treatment plants are made from composites and do not corrode.
- Miracell sewage treatment are lightweight and have a life span of over 15 years.



Water sample from Robinson Club Maldives



## FEATURES & BENEFITS

- **MODULAR**
- **SILENT**
- **DURABLE**
- **ODORLESS**
- **AESTHETIC**
- **DO NOT CORRODE**
- **CONSUMES LOW ENERGY**

Can be installed Indoors & Outdoors or buried in ground

MIRANDA recycles waste water in conformity with irrigation norms (BOD 20, COD 120, TSS 30).



## Operational Costs of the Miranda System

200 m <sup>3</sup> /day Capacity Miracell Blue W.W.T.P. Operation Cost Table Robinson Club Maldives		
<b>ENERGY CONSUMPTION</b>		
<b>A. WASTEWATER TRANSFER PUMP</b> 0,55 kW		
Power	0,44 kW	
Amount	2 pcs	
Treated Water Per Month	6000 m <sup>3</sup>	
Daily Running Time	20 hour	
Energy Consumption Per Month	528 kW	
<b>Cost Per Month</b>	<b>149,8 TL</b>	<b>40,4 \$ / Month</b>
<b>Cost Per m<sup>3</sup></b>	<b>0,02 TL</b>	<b>0,01 \$ / m<sup>3</sup></b>
<b>B. MIRACELL GEARBOX &amp; MOTOR</b> 0,25 kW		
Power	0,20 kW	
Amount	8 pcs	
Treated Water Per Month	6000 m <sup>3</sup>	
Daily Running Time	24 hour	
Energy Consumption Per Month	1152 kW	
<b>Cost Per Month</b>	<b>326,9 TL</b>	<b>88,1 \$ / Month</b>
<b>Cost Per m<sup>3</sup></b>	<b>0,054 TL</b>	<b>0,02 \$ / m<sup>3</sup></b>
<b>C. CHLORINE, CAUSTIC, HCL DOSAGE PUMP</b> 0,016 kW		
Power	0,0128 kW	
Amount	4 pcs	
Treated Water Per Month	6000 m <sup>3</sup>	
Daily Running Time	20 hour	
Energy Consumption Per Month	31 kW	
<b>Cost Per Month</b>	<b>8,7 TL</b>	<b>2,4 \$ / Month</b>
<b>Cost Per m<sup>3</sup></b>	<b>0,0015 TL</b>	<b>0,0004 \$ / m<sup>3</sup></b>
<b>D. SAND FILTER FEED PUMP</b> 2,20 kW		
Power	1,76 kW	
Amount	1 pcs	
Treated Water Per Month	6000 m <sup>3</sup>	
Daily Running Time	20 hour	
Energy Consumption Per Month	1056 kW	
<b>Cost Per Month</b>	<b>299,7 TL</b>	<b>80,8 \$ / Month</b>
<b>Cost Per m<sup>3</sup></b>	<b>0,0499 TL</b>	<b>0,0135 \$ / m<sup>3</sup></b>
<b>E. SAND FILTER BACKWASH PUMP</b> 2,20 kW		
Power	1,76 kW	
Amount	1 pcs	
Treated Water Per Month	6000 m <sup>3</sup>	
Daily Running Time	1 hour	
Energy Consumption Per Month	53 kW	
<b>Cost Per Month</b>	<b>14 TL</b>	<b>4 \$ / Month</b>
<b>Cost Per m<sup>3</sup></b>	<b>0,002 TL</b>	<b>0,0001 \$ / m<sup>3</sup></b>
<b>F. ULTRAFILTRATION</b> 3,00 kW		
Power	2,40 kW	
Amount	1 pcs	
Treated Water Per Month	6000 m <sup>3</sup>	
Daily Running Time	20 hour	
Energy Consumption Per Month	1440 kW	
<b>Cost Per Month</b>	<b>408,7 TL</b>	<b>110,2 \$ / Month</b>
<b>Cost Per m<sup>3</sup></b>	<b>0,0681 TL</b>	<b>0,0184 \$ / m<sup>3</sup></b>
<b>Total Annual Energy Cost</b>	<b>14,506 TL</b>	<b>3,910 \$</b>
<b>Total Annual Energy Cost Per m<sup>3</sup></b>	<b>0,0681 TL</b>	<b>0,0184 \$</b>
<b>FIXED DATA</b>		
Exchange Rate	: 3,71 TL / \$	Motor Int. Power : 0,8
Daily / Monthly Flow	: 200 m <sup>3</sup> / 6000 m <sup>3</sup>	Absorbed Power : 0,8
Electric Cost	: 0,2838 TL - 0,08 \$ / kWh	1 Month : 30 days

Miranda is proud to assist in saving significant amounts of funds while contributing to the environment.



Miranda is proud to contribute to help keep Landscape of Robinson Club Maldives greener.