

This questionnaire has been designed by a work team of the Technological Center CARTIF to obtain information about the wastewater treatment plant in the field of the MEDAWARE project - Development of tools and guidelines for the promotion of the sustainable urban wastewater treatment and reuse in the agricultural production in the Mediterranean countries

1 BASIC DATA OF THE WASTEWATER TREATMENT PLANT

Name:	Mr. Ali INCI	Position:	Head of Technical Department, Environmental Engineer
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1. Where is your local wastewater treatment plant located?

Address:	Eski Izmit Asfalti Baglar Mevkii Pasakoy Samandıra, Kartal		
City:	Istanbul	County:	Turkey
		State:	-
		Zip:	-
Telephone number	+ 0090 216 304 63 56-57-78	Fax number	+ 0090 216 304 63 54
E-mail address	incia_eng@myne t.com; cauk@iski.gov.tr		

2. How many stages of treatment does your facility use?

Primary	<input checked="" type="checkbox"/>	_____
Secondary	<input checked="" type="checkbox"/>	_____
Tertiary	<input checked="" type="checkbox"/>	Advanced _P and N removal_____
Other	<input type="checkbox"/>	_____

3. What is the capacity of the treatment plant?

Liters per day (average)	100.000.000.
Number of People and/or Employees	61+9
Peak Daily Flow Estimate	125.000.000

4. How is the sludge disposed of?

Burned	<input type="checkbox"/>	Landfill	<input checked="" type="checkbox"/>
Fertilizer	<input type="checkbox"/>	Other	<input type="checkbox"/>

5. Where does the treated wastewater go after it leaves the plant?

River or Stream	<input checked="" type="checkbox"/>	Lake	<input type="checkbox"/>
Ocean	<input checked="" type="checkbox"/>	Other	<input type="checkbox"/>

6. In what year was the plant built?

2000

7. Have there been any modifications of the plant in recent years?

Two new centrifuge filters have been added to the existing two in 2003. Due to continuous overloading problems (in the average, 2-3 fold more than the design output according to the parameter), installations have been restarted in March 2005 regarding the following revisions of the existing plant units; increasing the volume of the process and sedimentation basins (tanks), increasing the aeration capacity (number of diffusers, blowers, aeration lines etc.), increasing the capacity of sludge and sand receiving units.

8. Are there any plans for additional improvements to the plant?

Alternatives for direct dewatering and sludge drying are planned for the existing treatment plant. Contracts with interested firms are planned for the 2nd capacity.

9. Wastewater analysis information (influent)

Wastewater BOD	320 (mg/L)
Wastewater COD	550 (mg/L)
Wastewater Suspended Solids	500 (mg/L)
Total Kjeldahl Nitrogen (TKN)	65 (mg/L)
Total Phosphorous (TP)	8 (mg/L)

Note: Average values are given for 2004-2005.

10. Treated water- Local government requirement - If known (effluent)

Wastewater BOD	20 (mg/L)
Wastewater COD	10 (mg/L)
Wastewater Suspended Solids	30 (mg/L)
TP	2 (mg/L)

Note: Currently all discharge parameters are met except Suspended Solids sometimes because of minor sludge bulking problems

2 WASTEWATER TREATMENT INFORMATION

11. Primary Treatment Processes

	Processes	Size (if know)	Main operational problems (if exists)
<input checked="" type="checkbox"/>	Bar or bow screen	50 mm course/10 mm fine screen	Generally speaking, the mechanical cleaning unit creates problems Overloading causes clogging problems in the grit/sand separation pumping system from time to time. The grit/sand separation system featuring an archimedian screw pump has been replaced with grit bunkers due to unaffordable operational costs
<input checked="" type="checkbox"/>	Grit removal	Capacity 560 m ³	
<input type="checkbox"/>	Primary sedimentation	_____	_____
<input type="checkbox"/>	Comminution	_____	_____
<input checked="" type="checkbox"/>	Oil / fat removal	_____	_____
<input type="checkbox"/>	Flow equalisation	_____	_____
<input type="checkbox"/>	pH neutralisation	_____	_____
<input type="checkbox"/>	Imhoff tank	_____	_____
<input type="checkbox"/>	_____	_____	_____
<input type="checkbox"/>	_____	_____	_____

12. Secondary Treatment Processes

	Processes	Size (if know)	Main operational problems (if exists)
<input checked="" type="checkbox"/>	Activated sludge	_____	_____
<input checked="" type="checkbox"/>	Extended aeration	40000 m ³	_____
<input type="checkbox"/>	Aerated lagoon	_____	_____
<input type="checkbox"/>	Trickling filter	_____	_____
<input type="checkbox"/>	Rotating bio-discs	_____	_____
<input checked="" type="checkbox"/>	Anaerobic treatment/UASB	_____	_____
<input type="checkbox"/>	Anaerobic filter	_____	_____
<input type="checkbox"/>	Stabilisation ponds	_____	_____
<input type="checkbox"/>	Constructed wetlands	_____	_____
<input type="checkbox"/>	Aquaculture	_____	_____

13. Tertiary Treatment Processes

	Processes	Size (if know)	Main operational problems (if exists)
<input checked="" type="checkbox"/>	Nitrification	22350 m ³ + 11175 m ³ (usable)	Clogging problems with ceramic diffusers. Problems with the mixers in the aeration /mixing basins. Foaming problems are also often encountered due to dilution of the wastewater in rainy seasons + and when oxygen transfer efficiency decreases
<input checked="" type="checkbox"/>	Denitrification	11175 m ³ + 11175 m ³ (usable)	_____
<input type="checkbox"/>	Chemical precipitation	_____	_____
<input type="checkbox"/>	Disinfection	_____	_____
<input type="checkbox"/>	(Direct) filtration	_____	_____
<input type="checkbox"/>	Chemical oxidation	_____	_____
<input checked="" type="checkbox"/>	Biological P removal	_____	_____
<input type="checkbox"/>	Constructed wetlands	_____	_____
<input type="checkbox"/>	Aquaculture	_____	_____
<input type="checkbox"/>	_____	_____	_____
<input type="checkbox"/>	_____	_____	_____

14. Advanced Treatment Processes

	Processes	Size (if know)	Main operational problems (if exists)
<input type="checkbox"/>	Chemical treatment	_____	_____
<input type="checkbox"/>	Reverse osmosis	_____	_____
<input type="checkbox"/>	Electrodialysis	_____	_____
<input type="checkbox"/>	Carbon adsorption	_____	_____
<input type="checkbox"/>	Selective ion exchange	_____	_____
<input type="checkbox"/>	Hyperfiltration	_____	_____
<input type="checkbox"/>	Oxidation	_____	_____

- Detoxification _____
- _____
- _____

Other comments

The plant practices biological Carbon, Nitrogen and Phosphorous removal using the A2/O Process. Although the design capacity is currently being exceeded by a factor of 2-3 (system overload), the existing, national discharge parameters (for water quality) are all met with the treatment system. However, the system's hydraulic capacity has been achieved by 60% (dry air), and hence the plant capacity has been increased to cope with the expected increase in wastewater flow rate and organic load. The main operational problem of the treatment plant is arising due to the fact that the sewer system accepts not only sewage but also rain-and creek water. As a result, different critical operational problems (i.e. the sludge load of the treatment plant increases and the sludge units work over their capacity, oxygen transfer efficiency decreases, the mechanical units operate under stress and hence do not work properly/are out of operation very soon, foaming problems) occur.

3 CONTROL AND MONITORING SYSTEMS

15. Which are the most critical process parameters that may affect the efficiency of the wastewater treatment plant?

<i>Parameter</i>	<i>Process</i>	<i>Current Automatic Control?</i>
<input type="checkbox"/> Wetwell levels	On-off pumping	Yes <input type="checkbox"/> No <input type="checkbox"/>
<input type="checkbox"/> Sludge depth	Primary treatment	Yes <input type="checkbox"/> No <input type="checkbox"/>
<input checked="" type="checkbox"/> Solids Retention Time (SRT)	Conventional activated sludge	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Dissolved oxygen concentration	Conventional activated sludge	Yes <input type="checkbox"/> X No <input type="checkbox"/>
<input type="checkbox"/> Return flowrate from the clarifier	Conventional activated sludge	Yes <input type="checkbox"/> No <input type="checkbox"/>
<input checked="" type="checkbox"/> Internal recycle	Biological nutrient removal	Yes <input type="checkbox"/> X No <input type="checkbox"/>
<input type="checkbox"/> Methanol feed rate	Biological nutrient removal	Yes <input type="checkbox"/> No <input type="checkbox"/>
<input checked="" type="checkbox"/> Air / solids ratio	Dissolved air flotation thickening	Yes <input type="checkbox"/> X No <input type="checkbox"/>
<input type="checkbox"/> Sludge depth	Gravity thickening	Yes <input type="checkbox"/> No <input type="checkbox"/>
<input type="checkbox"/> Belt speed	Gravity belt thickening	Yes <input type="checkbox"/> No <input type="checkbox"/>
<input type="checkbox"/> Chemical dosage rate	Chemical addition for water-solids separation	Yes <input type="checkbox"/> No <input type="checkbox"/>
<input type="checkbox"/> Chlorine dosage rate	Chlorination	Yes <input type="checkbox"/> No <input type="checkbox"/>
<input type="checkbox"/> _____	_____	Yes <input type="checkbox"/> No <input type="checkbox"/>
<input type="checkbox"/> _____	_____	Yes <input type="checkbox"/> No <input type="checkbox"/>
<input type="checkbox"/> _____	_____	Yes <input type="checkbox"/> No <input type="checkbox"/>
<input type="checkbox"/> _____	_____	Yes <input type="checkbox"/> No <input type="checkbox"/>
<input type="checkbox"/> _____	_____	Yes <input type="checkbox"/> No <input type="checkbox"/>
<input type="checkbox"/> _____	_____	Yes <input type="checkbox"/> No <input type="checkbox"/>
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<input type="checkbox"/> _____	_____	Yes <input type="checkbox"/> No <input type="checkbox"/>
<input type="checkbox"/> _____	_____	Yes <input type="checkbox"/> No <input type="checkbox"/>
<input type="checkbox"/> _____	_____	Yes <input type="checkbox"/> No <input type="checkbox"/>

16. In your opinion, what are the main problems with the control system of the wastewater treatment plant?

Problems encountered with the control system are mainly due to electrical power cut-offs (shortages). They are still quite common in our country.

17. In your opinion, what treatment processes / parameters should be monitored / controlled automatically?

All mechanical equipment should be monitored automatically. The most important unit in the control system is the aeration unit; blowers and aeration valves need to be controlled automatically. Also pH, oxygen, ORP, sludge level measurement as well as ammonia, nitrate, and phosphorous parameters should be followed on-line.

P.S. For more numerical details about our treatment plant please visit www.iski.gov.tr/yatirimfaaliyetleri/isletmefaaliyetleri

If you have any questions about this document, please contact us by e-mail at yolnun@cartif.es

Thank you for your collaboration.