

SUMMARY

FOREWORD.....	3
PROJECT DATA.....	4
SIMPLIFIED DIAGRAM USING THE BELOW SECTIONS	7
SFLOW SHEET – GRAVITY SYSTEM.....	8
EQUIPMENT LIST – GRAVITY SYSTEM.....	9
CIVIL WORK EXAMPLE	12
SALES TERMS	21

07/12/2023	OF.23.181	02	R.T.	R.T.	S.C.	Pag. 2 a 23
Data	Offerta	Revisione	Preparato	Controllato	Approvato	

FOREWORD

SDG works according to UNI EN ISO 9001:2015 certified quality control system.

From design to production of our equipment, each phase is monitored according to ISO quality regulations in order to offer first-class products.

We manufacture using top-quality raw materials and the product traceability is an added value to the constant attention we pay to comply with health and hygienic rules.

The constant changes in technology and market trends have led us company to adapt our products to the market demands, so we offer a wide range of products.

Our goal is to increase the environmental benefits by reducing the operating costs while guaranteeing high operation flexibility, supplying innovative and highly-efficient machines and equipment with the possibility to recover part of the treated wastewater to be used for industrial purposes.

07/12/2023	OF.23.181	02	R.T.	R.T.	S.C.	Pag. 3 a 23
Data	Offerta	Revisione	Preparato	Controllato	Approvato	

PROJECT DATA

REFERENCE ENVIRONMENTAL DATA, RULES AND STANDARDS

The equipment described in this technical report will be designed to operate under following conditions

Description of environmental conditions

Parameter	Unit of Measurement	Value
Seismic area*	N/R	
Classification ATEX area	Not classified	
Minimum outside temperature	°C	+ 10
Maximal outside temperature	°C	+ 40
Project barometric pressure	atm	1
Relative humidity	%	50÷100
Prevailing winds*	m/s	N/R
Wind pressure *	kg/m ²	N/R
Rainfall load*	mm/h	N/R
Altitude	N.R.	

(*) N/R = the value of corresponding parameter is considered not relevant for the purpose of designing.

Our offer will correspond to all laws and regulations on safety and health in workplace.

Please find here below the main rules and technical standards to which SDG refers to:

Safety directive	2006/42/CE (Machine
directive)	
Technical drawings, symbols and logic diagrams	UNI ISO 10209 -1
Metal material and piping	UNI EN 10204
Plastic piping	EN 1452:2010
	EN ISO 15494:2005
Threading	ISO 68-1, 261 e 262
Flanges	UNI / EN/ 1092-1
Pressure safety rules (vessels and valves)	DIRTIVE PED 97/23/CE
Specifications low voltage electrical panel board	IEC/EN 61439
Safety and electrical equipment of machines	EN 60204-1

07/12/2023	OF.23.181	02	R.T.	R.T.	S.C.	Pag. 4 a 23
Data	Offerta	Revisione	Preparato	Controllato	Approvato	

PROJECT DATA

		MC/DAY
TYPE OF WASTE		
RESORT		295
STAFF		
LAUNDRY		
SLAUGHTERHOUSE		5
TOTAL CONSUMPTION		300


INLET WASTEWATER

	U.M.	
Civil water Daily flow rate	m³/day	2*150
pH		6.5-7.5
TSS	mg/l	± 250
COD	mg/l	± 700
BOD ₅	mg/l	± 300
Total Phosphorus	mg/l	± 20
Total Nitrogen	mg/l	<60
Slaughterhouse Daily flow rate	m³/day	5
pH		4.5-5.5
TSS	mg/l	± 2000
COD	mg/l	± 6000
BOD ₅	mg/l	± 4000
Total Phosphorus	mg/l	± 30
Total Nitrogen	mg/l	<200
Project flow rate	m ³ /h	6.5
Max flow rate	m ³ /h	8

OUTLET WATER AFTER TREATMENT WITH UF & UV SYSTEM

Parameters	Units	Maximum Permissible Limits
Temperature (at point of discharge)	-C	35
pH @25-C	pH units	5.5- 8.5
Total Suspended solids	mg/L	10
BOD ₅ @20-C	mg/L	20
COD	mg/L	50
Free Chlorine	mg/L	0.5
Chloride	mg/L	750
Total Nitrogen (N)	mg/L	20
Nitrite (N)	mg/L	1
TKN (N)	mg/L	15
Total Phosphorus (P)	mg/L	5
Oil and grease	mg/L	2
Total coliforms	Cfu/100ml	Not detectable /close to zero
E Coli	Cfu/100ml	Not detectable /close to zero
Intestinal Enterococci	Cfu/100ml	Not detectable /close to zero
Salmonella		Absent
Sulphate	mg/L	750
Sulphide	mg/L	0.002
Chromium (total)	mg/L	0.05
Arsenic	mg/L	0.1
Beryllium	mg/L	0.1
Boron	mg/L	0.75
Mercury (total)	mg/L	0.005
Molybdenum	mg/L	0.01
Cadmium	mg/L	0.01
Cobalt	mg/L	0.05
Copper	mg/L	0.5
Iron	mg/L	2.0

Lead (total)	mg/L	0.05
Lithium	mg/L	2.5
Copper (total)	mg/L	0.5
Zinc (total)	mg/L	2
Nickel (total)	mg/L	0.1
Selenium	mg/L	0.02
Sodium	mg/L	200
Aluminium	mg/L	5
Manganese (total)	mg/L	0.2
Vanadium	mg/L	0.1
Total Pesticides	mg/L	0.025
Total organic halides	mg/L	1
Cyanide	mg/L	0.1
Detergents	mg/L	15

 *compliance with the limits given in the table for anions and cations such as chlorides and sulphates is closely linked to the input data as the water treatment plant has no influence on either reducing or increasing their values.*

SIMPLIFIED DIAGRAM USING THE BELOW SECTIONS

Wastewater goes through a screening section first, then it is homogenised by air insufflation.

This wastewater treatment plant is of biological type with activated sludge at dispersed mass by aerobic mesospheric bacterial cultures.

The operation of this type of plants is essentially based on an intense aeration of the waste followed by clarification.

Complex chemical, physical and biological phenomena occur in an oxygen-rich environment which forms sludge flocks: small gelatinous masses that use organic elements in the wastewater for their development by transforming them into living and separable substances.

In the next clarification section, treated water will overflow into a special collection canal in order to be sent to the discharge and/or to its partial recovery process.

The resulting sludge is then thickened or sent to a mechanical dehydration unit in order to reduce its volume.

The wastewater to be treated have a high content of greases and longer demolition times of the organic substances compared to civil plants. This entails the installation of a dynamic degreasing system by flotation and oxidation tanks with proper volumes.

Treatment of industrial waste

Wastewater line

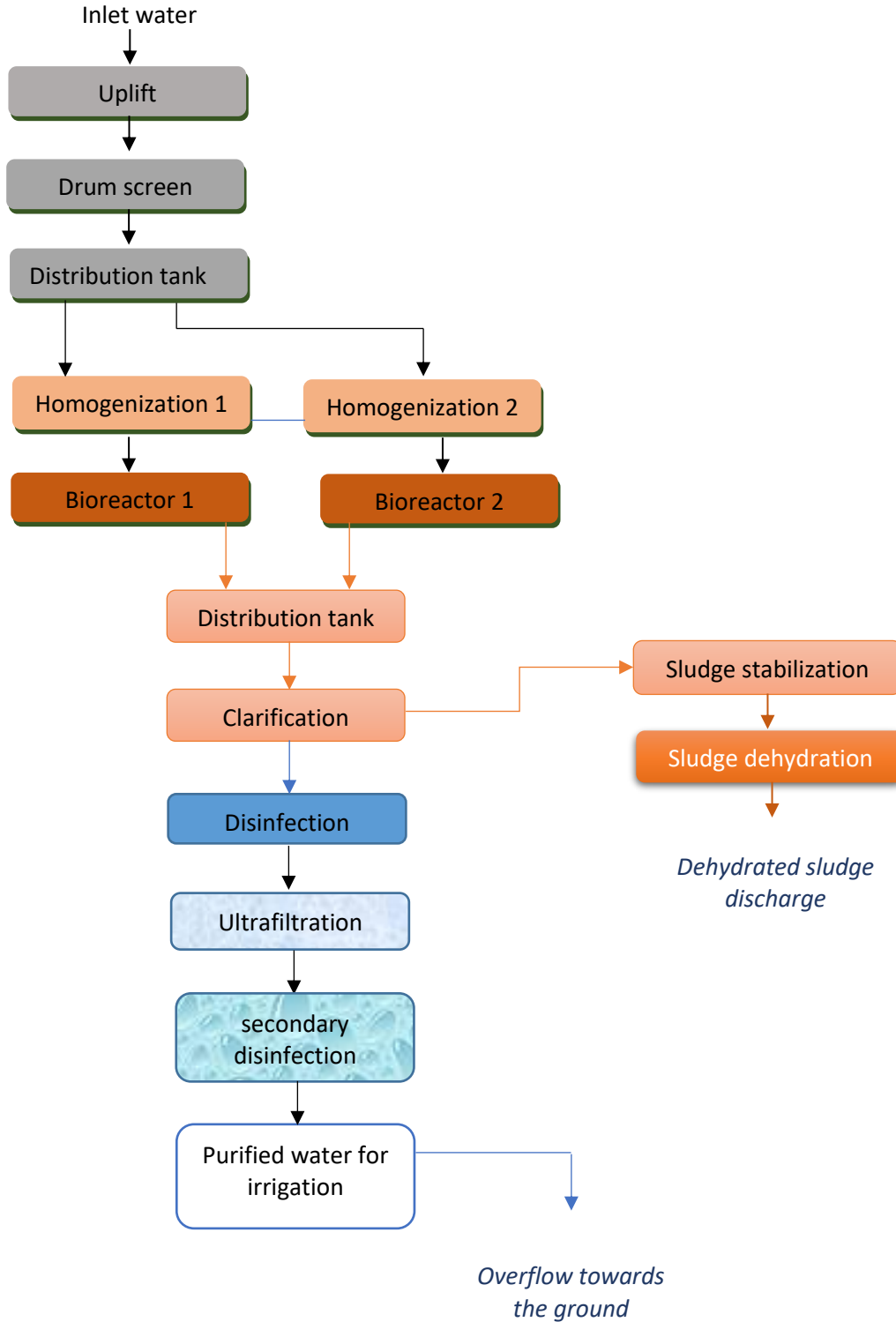
- Uplift
- Fine screening
- Homogenization
- Biological oxidation & Denitrification
- Clarification by gravity
- Disinfection with hypochlorite
- ~~Sand and carbon filtration (option one)~~
- Disinfection with UV
- UF (option two)

Sludge line

- Sludge stabilization
- Sludge dehydration

07/12/2023	OF.23.181	02	R.T.	R.T.	S.C.	Pag. 10 a 23
Data	Offerta	Revisione	Preparato	Controllato	Approvato	

FLOW SHEET – OPTION TWO



07/12/2023	OF.23.181	02	R.T.	R.T.	S.C.	Pag. 12 a 23
Data	Offerta	Revisione	Preparato	Controllato	Approvato	

EQUIPMENT LIST – LINE ONE

SECTION	EQUIPMENT	NO.
Hydraulic uplift	Submersible pumps suitable for clear and wastewater and for sewage and sludge containing solids and fibrous. Waterproof motor and pumps are a compact section. Three-phase motor 400V, 50Hz. Capacity (mc/h): 40,	1+1
	floating level sensors	4
Sand removal	sand removal system with stainless steel hydrocyclone, complete with timed automatic bottom discharge valve	1
Micro screening	Screening machine Mod. SDG GRT completely made in AISI 316 stainless steel. Drum diameter 630mm; Drum width 600 mm; Screening size 1.0 mm. Capacity: 100 mc/h	1
	Wastewater distribution tank prepared for 2 outlets	1
Equalization and lifting section	Rotary blowers able to provide a flow of 200 mc/h. Complete with base, inlet reactive silencers with discharge filter, safety valve, no return valve.	1
	Diffusion network for installation at the bottom of the tank. Including elbows, flanges, ball valves, dismantling joints, all the devices to activate it according to the project. Including clamping brackets on tank bottom and N°30 plates (12'') with EPDM membrane.	1
	Submersible pumps suitable for clear and wastewater and for sewage and sludge containing solids and fibrous. Waterproof motor and pumps are a compact section. Three-phase motor 400V, 50Hz. Capacity (mc/h): 10	2
	floating level sensors	4
Aerobic bioreactor	Rotary blowers able to provide a flow of 200 mc/h. Complete with base, inlet reactive silencers with discharge filter, safety valve, no return valve.	1+1
	Diffusion network for installation at the bottom of the tank. Including elbows, flanges, ball valves, dismantling joints, all the devices to activate it according to the project. Including clamping brackets on tank bottom and N°36 plates (12'') with EPDM membrane.	1
	submersible mixer	1
Clarification by gravity	Peripheral traction bridge crane. Girder and submerged parts entirely made of AISI 316 stainless steel, overflow channel with Thompson profile. Installed power 0.55 kw.	1
	sludge recirculation pump	1+1
	Wastewater distribution tank prepared for 2 outlets	1
Disinfection	Sodium hypochlorite dosing system complete with dosing pump, containment tank and feeding pipe with level sensor	1+1

07/12/2023	OF.23.181	02	R.T.	R.T.	S.C.	Pag. 13 a 23
Data	Offerta	Revisione	Preparato	Controllato	Approvato	

Filtration	Filtering section with sand and activated carbon filtration columns diam. 1400 mm. Complete with valves for the management of work and backwash cycles.	1+1
	Filter feed pump flow 15 mc/h at 30 m of water column	1+1
	Filter BW pump flow 25 mc/h at 30 m of water column	1+1
	UV disinfection system U.V.R. - LAMP STERILIZER 6x190 W 1"1/2 connection - LCD PANEL 1"1/2 connection - LCD PANEL 254nm UVC radiation probe E flow rate 10 mc/h	1
Interconnections	All the materials needed for the hydraulic and electrical connection of the various sections that make up the plant are included in the supply	included
Electrical panel board	Electrical panel board for control and monitor For the control and automation of the installed utilities. IP55 protection. Made according to rules of the European electro technical Committee (CEI), Italian rules and regulation concerning the safeguarding and accident prevention, UNEL rules regarding the normalization of the electrical material, Siemens PLC for the parameters adjusting <u>and router UBIQUITY ASEM with integrated 4G-GLOBAL modem to reach the system even in the absence of a wired Internet network</u> <i>Equipment specifics</i> Inside the panel board will be housed the command and protection equipment of the mentioned utilities and related control devices: · Led power indicator ø22mm · Bright selector AUTO-0-MAN ø22mm for each user · Warning light cumulative alarms ø22mm · Push button cycle start/stop ø22mm	1
Sludge stabilization <u>this section has been dimensioned for two plant of 300 m³/day of waste water each</u>	Rotary blowers able to provide a flow of 200 mc/h. Complete with base, inlet reactive silencers with discharge filter, safety valve, no return valve.	1
	Diffusion network for installation at the bottom of the tank. Including elbows, flanges, ball valves, dismantling joints, all the devices to activate it according to the project. Including clamping brackets on tank bottom and N°30 plates (12") with EPDM membrane.	1
Dehydration sludge <u>this section has been dimensioned to treat the sludge produced by two plant of 300 m³/day of waste water each</u>	Screw press model SDG PCSS 301 Structure Material AISI 316 Coil material AISI 316 Dimensions (L * w * H) 2520*840*1430mm Basket diameter (mm) 300 Net weight (kg) 820 Weight in working conditions (kg) 1220 Screw shaft motor (kW) 0.75 Mixer motor (kW) 0.55	1

07/12/2023	OF.23.181	02	R.T.	R.T.	S.C.	Pag. 14 a 23
Data	Offerta	Revisione	Preparato	Controllato	Approvato	

	<p><i>Washing system 1 (24 V DC solenoid valve)</i></p> <p><i>Feed pump</i></p> <p><i>Polyelectrolyte pump</i></p> <p><i>Control panel on the machine with the following controls. Supply of automation electrical panel, complete with software programming</i></p> <p><i>Glass fiber cabinet with IP 55 protection degree.</i></p>	
	<p><i>polypreparator model DPP 1000 complete with agitator, loading circuit with G.1" solenoid valve and concentrated polyelectrolyte dosing pump</i></p>	1
Ultrafiltration	<p><i>UF unit, capillary technology producing capacity 330 m³/day</i></p> <p>FEED WATER QUALITY INFORMATION</p> <p><i>Type of Water Source Municipal WW - Clarifier Effluent</i></p> <p><i>Design Water Temperature 22,0 °C</i></p> <p><i>Water Temperature - Minimum 20,0 °C</i></p> <p><i>Water Temperature - Maximum 35,0 °C</i></p> <p><i>Total suspended solids 50 mg/L</i></p> <p><i>Turbidity 50 NTU</i></p> <p><i>Total Organic Carbon (TOC) 10 mg/L (Not Provided - Default Value Used)</i></p> <p><i>BOD5 30 mg/L</i></p> <p><i>COD 60 mg/L</i></p> <p>SYSTEM FLOWS</p> <p><i>Design filtrate Capacity: 330 m³/d 13.75 m³/h</i></p> <p><i>Recovery 97,62 %</i></p> <p><i>UV disinfection system</i></p> <p><i>U.V.R. - LAMP STERILIZER 6x190 W</i></p> <p><i>1"1/2 connection - LCD PANEL</i></p> <p><i>1"1/2 connection - LCD PANEL</i></p> <p><i>254nm UVC radiation probe E</i></p> <p><i>flow rate 10 mc/h</i></p>	1
Clean water Storage	<p>Pressure and distribution group</p> <p>CONSTRUCTION FEATURES - COMPONENTS</p> <p>HYDRAULIC PART</p> <ul style="list-style-type: none"> <i>· 2 centrifugal electric pumps with stainless steel body</i> <i>· stainless steel suction and delivery manifolds</i> <i>· ball valves with union on the suction and delivery of each pump</i> <i>· check valves on the suction of each pump</i> <i>· radial pressure gauge with shut-off valve</i> <i>· 18-liter diaphragm pump</i> 	1

EQUIPMENT LIST – LINE TWO

SECTION	EQUIPMENT	NO.
Equalization and lifting section	Rotary blowers able to provide a flow of 200 mc/h. Complete with base, inlet reactive silencers with discharge filter, safety valve, no return valve.	1
	Diffusion network for installation at the bottom of the tank. Including elbows, flanges, ball valves, dismantling joints, all the devices to activate it according to the project. Including clamping brackets on tank bottom and N°30 plates (12'') with EPDM membrane.	1
	Submersible pumps suitable for clear and wastewater and for sewage and sludge containing solids and fibrous. Waterproof motor and pumps are a compact section. Three-phase motor 400V, 50Hz. Capacity (mc/h): 10	2
	floating level sensors	4
Aerobic bioreactor	Rotary blowers able to provide a flow of 200 mc/h. Complete with base, inlet reactive silencers with discharge filter, safety valve, no return valve.	1
	Diffusion network for installation at the bottom of the tank. Including elbows, flanges, ball valves, dismantling joints, all the devices to activate it according to the project. Including clamping brackets on tank bottom and N°36 plates (12'') with EPDM membrane.	1
	submersible mixer	1
Interconnections	All the materials needed for the hydraulic and electrical connection of the various sections that make up the plant are included in the supply	included

07/12/2023	OF.23.181	02	R.T.	R.T.	S.C.	Pag. 16 a 23
Data	Offerta	Revisione	Preparato	Controllato	Approvato	

CIVIL WORK EXAMPLE

Please find here below an example of volumes and surfaces of the wastewater treatment plant.

Section	Tot. Volume (mc)	Tot. Surface (mq)	Width (m)	Length (m)	Nr. of lines	Height (m)	Walls Height (m)
LIFTING	15	6	2	3	1	2,5	3,0
EQUALIZATION	275	110	5	11	2	2,5	3,0
OXIDATION-DENITRO	300	120	5	12	2	2,5	3,0
CLARIFICATION	115	38.5	∅ 7.0		1	3.0	
SLUDGE TANK	150	60	5	10	1	2,5	3,0
DISINFECTION TANK	3	3	1,0	3,0	1	1,0	1,5
FILTERS OR UF FEEDING TANK	22,5	9	3,0	3,0	1	2,5	3,0
TREATED WATER STORAGE	1020	340	20	17	1	3.0	3.5
PANEL BOARD AREA		80	5	16	1	3.5	
COMPRESSORS AREA							
UF AREA							
DEHYDRATION AREA							