

STREAM INFORMATION		
STREAM NUMBER:	EVERY STREAM IS FORMED BY TWO COUPLE OF NUMBERS: FIRT COUPLE REFERS TO THE AREA WHERE THE STREAM START AND IT IS REFERED TO DOC. "STD TAGGING LIST" SECOND COUPLE IS A PROGRESSIVE NUMBER FROM 01 TO 99. EVERY STREAM IS ASSOCIATED IN THE TABLES TO ONE FLUID TAG EXPLAINED IN	E.g. 4001 E.g. 4X IS USED FOR DIGESTER AREA AND IN PARTICULAR 40 IS USED FOR BUFFER TANK E.g. 4001 IS THE FIRST STREAM ASSOCIATED TO BUFFER TANK, THEN YOU CONTINUE WITH 4002,4003,4004...etc E.g. 4001 CAN BE ASSOCIATED TO "DGH", "DSL", "DSM", "BS", etc
SERVICE TYPE:	CONTINUOUS INTERMITTENT CYCLES PROVISION EVERY ... DAYS/ONCE A WEEK IMPULSIVE BY CLIENT BATCH STANDBY OVERFLOW INJECTIONS	LINE THAT IS IN OPERATION ALL THE TIME NOT REGULAR SCHEDULE DURING DAY/WEEK SET BY OPERATOR (E.G. DIGESTER FEEDING) LINE THAT CAN BE USED IN CASE OF NEED E.g. MATERIAL DISCHARGE, CLEANINGS E.g. GRAPPLE CRANE MANAGED BY CLIENT, NOT REGULAR SCHEDULE PASTEURIZER CYCLES USED IN CASE OF FAULT/MAINTENANCE OF OTHER LINES E.g. MBR TANKS E.g. CHEMICALS
YEARLY WORK TIME:	d/y	CONSIDERING MAINTENANCE DAYS, CONTRACT SPECIFICATIONS AND SO ON
WEEKLY WORK TIME	d/w	E.g. RECEPTION 5 DAYS/WEEK, BIOLOGICAL PROCESSES 7 DAYS/WEEK
AVAILABLE WORK TIME	h/d	(PERIOD OF TIME IN WHICH THE LINE COULD BE ACTIVE)
EFFECTIVE WORK TIME	h/d	(BASED ON PUMP CAPACITY)
YEARLY FLOWRATE	ton/year	
DAILY FLOWRATE	ton/year	
FLOWRATES	MASS FLOW (t/h) OR VOLUMETRIC FLOW (m³/h) BASED ON PROCESS SECTION. MIN AND MAX DEFINED BASED ON PROCES NEEDS.	E.g. MIN 50% OF TYPICAL FLOW; MAX +20% OF THE TYPICAL FLOW
TEMPERATURE	°C	
PRESSURE	bar or mbar	
DENSITY MIN AND MAX	kg/m³	

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DIFFERENT STREAMS		
ADDITIONAL INFORMATION FOR BIOGAS LINE (#2000)	NORMAL AND/OR STANDARD VOLUMETRIC FLOW DRY NORMAL VOLUMETRIC FLOW WET [SHOW BOTH DRY AND WET BG] ACTUAL VOLUMETRIC FLOW DRY ACTUAL VOLUMETRIC FLOW WET COMPONENTS (DRY BASIS): CH ₄ , CO ₂ , O ₂ , H ₂ S IF UPGRADING IS PRESENT: N ₂ , NH ₃ , VOC (DRY BASIS) RELATIVE HUMIDITY (WET)	Nm³/h and/or Sm³/h Nm³/h m³/h % % or ppm %
ADDITIONAL INFORMATION FOR FOUL AIR (#4000)	TYPICAL VOLUMETRIC FLOW MAX. VOLUMETRIC FLOW H ₂ S NH ₃ RELATIVE HUMIDITY ODORIMETRIC UNITS	Nm³/h Nm³/h ppm ppm % OU/m³
ADDITIONAL INFORMATION FOR AIR (#4000)	TYPICAL VOLUMETRIC FLOW MAX. VOLUMETRIC FLOW RELATIVE HUMIDITY	Nm³/h Nm³/h %
ADDITIONAL INFORMATION FOR UTILITY WATER (#5000)	DAILY FLOWRATE EFFECTIVE VOLUMEITRIC FLOW	m³/d m³/h
ADDITIONAL INFORMATION FOR HEATING WATER (#5500)	TYPICAL VOLUMETRIC FLOW (Flow power come from doc. A14 - Heating system design) T DELIVERY AND T RETURN THERMAL POWER (Thermal power come from doc. A14 - Heating system design)	m³/h °C Kw

DIFFERENT PLANT SECTIONS - MAIN STREAMS			
ADDITIONAL INFORMATION FOR PRE-TREATMENT	EFFECTIVE FLOWRATE MAX EQUIPMENT CAPACITY TS VS PARTICLE SIZE CONTAMINANTS OR LOSS OF ORGANIC (SSO PLANTS)	t/h t/h % % mm %	
ADDITIONAL INFORMATION FOR ANAEROBIC DIGESTION AND DEWATERING	EFFECTIVE FLOWRATE MAX. FLOWRATE TS VS pH TN NH ₃ -N	m³/h m³/h % % - mg/l	
ADDITIONAL INFORMATION FOR WASTE WATER TREATMENT PLANT	EFFECTIVE FLOWRATE pH TSS, VSS, TDS and VDS COD and BOD ₅ TN, TKN, NH ₃ , NO ₂ ⁻ and NO ₃ ⁻ ALKALINITY ANIONS/CATIONS TP	m³/h - mg/l mg/l mg/l mg/l	
ADDITIONAL INFORMATION FOR RESERVE OSMOSIS/EVAPORATOR	pH TSS and TDS COD and BOD ₅ TN, TKN, NH ₃ , NO ₂ ⁻ and NO ₃ ⁻ OTHERS BASED ON DISCHARGE LEGISLATION	- mg/l mg/l mg/l	
ADDITIONAL INFORMATION FOR COMPOSTING	pH TS RELATIVE HUMIDITY DENSITY OF EACH COMPONENT C/N RATIO MAX PARTICLE SIZE	- % % kg/m³ - mm	

SYMBOL	DESCRIPTION
	TIE POINT - CHANGE SUPPLIER
	INTERFACE NOT IN CONTRACT (E.g. EXISTING)

	MAIN FRACTION
	MOLASSES
	BAGASSE
	DIGESTATE
	LEACHATE / DRAINS
	CONDENSATION
	ANTI-FOAM
	FILTRATE
	CENTRATE
	COLD WATER
	HOT WATER
	BIOGAS
	BIOMETHANE
	CHEMICALS
	SOLID FRACTION
	BOG / OFF-GAS
	SERVICE WATER
	EXHAUSTED AIR

SYMBOL	EQUIPMENT
	LIQUID WASTE TANK
	DOSING STATION
	BELT CONVEYORS
	LOADING HOPPER AND SCREW
	MACERATOR PUMP SYSTEM
	SCREW
	CRANE
	PRESS
	CENTRIFUGAL PUMP
	LOBE PUMP
	CAVITY MONO PUMP
	SUBMERSIBLE PUMP
	CHEMICALS PUMP
	BLOWER
	SHREDDER

SYMBOL	LINE TYPES
	MAIN FLUID LINE
	SECONDARY FLUID LINE
	SOLID FRACTION LINE
	EQUIPMENT
	AREA BOUNDARIES
	RECIRCULATION LINE

SYMBOL	DESCRIPTION
	INSTRUMENTS INSTALLED ON PIPE, ON TANKS, MEMBRANE COVER, INTO PACKAGES. FOR ANY OTHER INFORMATIONS REFER TO STD A01.000
	TYPE OF MOTOR FOR PUMPS, MIXERS, OTHERS. FOR ANY OTHER INFORMATIONS REFER TO STD A01.000

SYMBOL	EQUIPMENT
	TRITON TANK WITH MIXERS, SERVICE BOX, HEATING SYSTEM AND POST-DIGESTER WITH DOUBLE MEMBRANE COVER
	TANK WITH MIXERS, SERVICE BOX, HEATING SYSTEM AND DOUBLE MEMBRANE COVER
	TANK WITH MIXERS, HEATING SYSTEM, CONCRETE ROOF
	BIOGAS STORAGE
	GAS ANALYSIS
	FLARE
	SCRUBBER
	BIOFILTER
	LAGOON
	SEPARATOR (FSP)
	SSD
	CENTRIFUGE
	HEAT EXCHANGER
	PROCESS WATER TANK
	POLYMER DISPERSION UNIT

FLUID	DESCRIPTION
AC	COMPRESSED AIR
ACA	CLEANED AIR TO ATMOSPHERE
ACE	ACETIC ACID
ACL	AIR CLEAN
AF	AIR FRESH
AFMO	ANTI FOAMING
AFO	AIR FOUL
AM	AMMONIUM SULFATE
ANB	ANTI BACTERIA
AP	FOUL AIR FROM PLASTIC DRYING
AR	AIR STRIPPING (H2O + NH3)
AS	ANTI SCALANT
BG	BIOGAS
BM	BIOMETHANE
BW	BIOFILTER WASH DOWNS
CO2	CARBON DIOXIDE
CA	CITRIC ACID
CAR	ACTIVE CARBON
CE	CONDENSATE FROM EVAPORATOR
CK	CAKE
CL	CONDENSATE LIQUOR
CS	COW SLURRY
CW	COMPOST WASTE
DA	DE-AMMONIATED CENTRATE
DET	DETERGENT
EC	CONCENTRATE FROM EVAPORATOR
EW	EXTRACTION WASTE WATER
FA	FRESH AIR FOR PLASTIC DRYING
FAT	FOUL AIR TREATED
FC	FILTRATE FROM CENTRIFUGE
FCL	FERROUS CHLORIDE
FE	FERRIC MATERIALS
FFE	FILTRATE FROM EQUALIZATION TANK
FL	FILTRATE FROM THICKENING (after screening)
FLT	FILTRATE FROM SSD
FOA	FOUL AIR
FR	FERRIC
FSB	FSP BIO REJECT
FW	FRESH WASTE
FWD	FRACTION AFTER HAMMER MILL
GC	TROMMEL FINES
GR	GRIT
HA	HYDROCHLORIC ACID
HAD	HOT AIR FOR DRIER
HCL	CHLORIDRIC ACID
HW	HEATING WATER
LCH	LEACHATE WATER
LS	FILTRATE FROM FSP
LW	FILTRATE FROM FSP
MIN	MICRO-NUTRIENTS
ML	MIXED LIQUOR (WAS and RAS)
MN	MANURE
NA	NITRIC ACID
NFE	NON FERRIC MATERIAL
OA	AERATION AIR IN OXIDATION
OC	ORGANICS RECOVERED FROM COMPACTOR
OF	ORGANIC AFTER HYDROCYCLONE
OFD	ORGANIC FRACTION DE-GRITTED
OX	PURE OXYGEN
PAO	PALM ACID OIL
PL	PROCESS LIQUOR
PLA	PROCESS LIQUOR (after primary digester)
PLB	PROCESS LIQUOR (after post digester)
PLC	LIQUID FILTRATE
PLF	PLASTIC FROM FSP
POC	POST COMPACTOR REJECT
POL	POLYMER PRIMARY DILUTED
POM	POMEGRANATE FEEDSTOCK
PR	PROPANE PR
PS	LIQUID PASTEURIZED
PW	POTABLE WATER
RF	REJECT FRACTION AFTER HAMMER MILL
ROJ	RO REJECT
ROP	RO PERMEATE
RW	RETENTATE WASTE WATER
SA	MEMBRANES SCOURING AIR
SAC	SULFAMIC ACID
SAG	SCRUBBING AGENT
SC	CAUSTIC SODE
SHD	SODIUM HYDROXIDE
SHP	SODIUM HYPOCHLORITE
SOC	SODIUM CARBONATE
ST	SLUDGE THICKENED
SU	SULFAMIC ACID
UFP	ULTRAFILTRATION PERMEATE
UW	UTILITY WATER
WA	WASHDOWN TO ANOXIC TANK
WE	WASHDOWN TO EQUALIZATION TANK
WFD	ORGANIC AFTER BIOREX DILUTED 18%
WFM	POST-DILUTION ORGANIC FRACTION
WW	WASTE WATER

FOR ANY OTHER INFORMATION REFER TO STANDARD FLUID LIST "A07 001"

TAG	EQUIPMENT ABBREVIATIONS
AC	AFTER COOLER
ACP	ACTIVATED CARBON POLISHING SYSTEM
ACT	AIR CONDITIONER
AH	ACCESS HATCH
AIT	ANALYZER GAS
AP	ALARM PANEL
AS	ANNULAR SEAL
AUG	AUGER
B	BLOWER
BAM	BAGGING MACHINE
BBS	BIOGAS BOOSTER SKID
BC	BIOCELL
BIN	BIN
BM	BIOMIXER
BO	BAG OPENER/BREAKER
BOI	BOILER
BR	BALER
BRB	BIOREATOR AERATION BLOWER
BRX	MSW PRESS
BVP	BACK PRESSURE VALVE
CB	BELT CONVEYOR
CBF	CARBON FILTER
CC	CALIBRATION COLUMN
CE	CENTRIFUGE
CH	CHILLER/DEHUMIDIFICATION
CHP	COMBINED HEAT AND POWER
CHT	CHUTE
CLP	CLEANPRESS
CMP	COMPACTOR
COM	AIR COMPRESSOR
CP	CONTROL PANEL
CR	CRANE
CS	CONTROL STATION
CYL	CYLINDER
DA	DEAERATOR
DC	DYNAMIC CYCLONE
DE	DIFFUSER
DP	DESULFURIZATION SYSTEM
DR	DRYER
DRN	DRAIN
DT	DRIP TRAP
ED	EDDY CURRENT
EIT	EJECTOR
EPB	EMERGENCY PUSH BUTTON
EVA	EVAPORATOR
EXP	EXPANSION VESSEL
FA	FLAME ARRESTOR
FC	FLEX COUPLING
FDR	FEEDER (LIVE BOTTOM BIN)
FFS	FLIP FLOW SCREEN
FL	EMERGENCY FLARE
FM	FLOW METER
FN	FAN
FRM	STEEL FRAME
FSP	UTS SEPARATOR
FT	FILTER
GB	GAS BLENDING
GE	GENERATOR
GMU	GAS MIXING UNIT
GRI	GRINDER
GWS	GRIT WASHING SYSTEM
H	HOPPER
HD	HYDRAULIC DRIVE UNIT
HDI	HYDRAULIC DISCONNECTOR
HM	HAMMER MILL
HP	HYDRO-PNEUMATIC
HPU	HYDRAULIC POWER UNIT
HT	HEAT TRACING
HX	HEAT EXCHANGER
HYD	HYDROCYCLONE
ITC	INTERCONNECTING TERMINATION CABINET
LS	LATERAL SCREW
M	MOTOR
MC	MEMBRANE TANK COVER
MD	METERING DRUM
MEM	MEMBRANE (FIBRACAST)
MS	METAL SEPARATOR
MX	MIXER
OPS	ORGANICS POLISHING SYSTEM
ORX	SSO PRESS
OSM	ORGANIC SEPARATION MILL
P	PUMP
PD	PULSATION DAMPENER
PHU	POLYMER MAKEUP UNIT
PKG	PACKAGE
PY	PYROLYSER
RAD	RADIATOR
RO	ROLLER
RTM	ROTAMETER
RU	RUN
SB	SERVICE BOX
SCB	SCRUBBER
SCN	SCREEN
SCW	SCREW CONVEYOR
SEP	SEPARATOR
SG	SIGHT GLASS
SH	SHREDDER
SM	STATIC MIXER
SMP	SUMP
SSD	SLUDGE SCREW DEWATERED
SST	SLUDGE SCREW THICKENER
STR	STRAINER
T	TRANSFORMER
TC	TANK COVER
THK	THICKENER
TK	TANK
TW	TWISTER
VE	VESSEL
VFD	VARIABLE FREQUENCY DRIVE
WSV	WINDSIFTER
XRF	SILOXANE REMOVAL FILTER

FOR ANY OTHER INFORMATION REFER TO STANDARD "STD TAGGING LIST"

REGIONE MARCHE
PROVINCIA DI FERMO
COMUNE DI FERMO

IMPIANTO DI TRATTAMENTO ANAEROBICO DELLA FRAZIONE ORGANICA DEI RIFIUTI SOLIDI URBANI PER LA PRODUZIONE DI BIOMETANO

CIG: 9880245C18 - CUP: F62F18000070004

PROGETTO ESECUTIVO			
NOME ELABORATO		CLASSE 4.2 INGEGNERIA DI PROCESSO ELABORATI GRAFICI	
PFD LEGENDA SIMBOLI ED EQUIPMENT		N. TAVOLA 4.2.1	
CODIFICA ELABORATO		FORMATO A1+	
23008-OW-C-42-DD-006-D1-0		SCALA -	

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00	19/09/2024	PRIMA EMISSIONE	D.BONANNO	C.BUTTICE	R.MARTELLO
REV	DATA	DESCRIZIONE	ESEGUITO	VERIFICATO	APPROVATO

Committente	Progettista indicato	Mandataria
 CITTA' DI FERMO Settore IV e Lavori Pubblici, Protezione Civile, Ambiente, Urbanistica, Patrimonio, Contratti e Appalti via Mazzini 4 63000 - Fermo (FM) DOTT. Mauro Fortuna RUP	 OWAC ENGINEERING COMPANY via Risorgimento 360 63000 - Fermo OWAC Engineering Company s.r.l. ING. Rocco Martello Direttore Tecnico	 via del Cardinale 22 70027 - Altamura (BA) EDILALTA s.r.l. DOTT. Angelantonio Disabato Socio Mandante via Bona di Castellano 3 46001 - Ausa (MN) ANAGERIA s.r.l. DOTT. Andrea Parisi Ingegnere