SUMMARY OF WASTE OF OXYSCLEAN® DECOMPOSITION TECHNOLOGY

Manufacturer:	**OXYSLUX sàrl**
Contact address:	**12-14, boulevard d'Avranches, L-1160 Luxembourg; info@oxys.lu Tel: 00352 621 142 501**

The purpose of the OXYSCLEAN® technology is to provide an optimal disposal solution for non-recyclable organic waste-types, including petroleum derivatives, by the means of a new technology called "thermo-magnetic decomposition". The solution is applicable as well to common municipal waste, however, in the context of circular economy policies, ideally serves the sectors of contaminant or toxic organic wastes.

The device is compact and does not require large spaces for installation. It does not use any type of fossil fuel for its operation, hence reducing costs and environmental impact levels. It, furthermore, reduces the mass of waste to up to 99% of initial waste input, with very low gaseous pollutants emissions, due to the flameless oxidation process, thus generating exceptionally low levels of dioxins and furans.

The technology was developed in Japan, by Professor Hiroshi AOKI, of Tokyo University. The combustion process requires no electricity, fuel, natural gas or biomass, as it uses solely the magnetic force provided by 30 pairs of neodymium magnets, which, by transforming the molecular structure of the oxygen which passes through them, allows the organic matter contained, to be decomposed in an accelerated form.

The equipment works by cycles and the average time of these cycles is of 2 to 3 hours. The approximate processing volume is from 01 to 02m³ per shift of 8 hours. Considering that 1m³ of waste can weigh up to 1.65 t, when very humid and/or containing high amounts of metals, one can achieve between 2 and 3 t / shift, running non-stop.

The system does not need additional combustion by any auxiliary equipment in order to improve its performance and efficiency. In addition, the system requires only a small number of operators. As a result, it operates at very low operating cost.

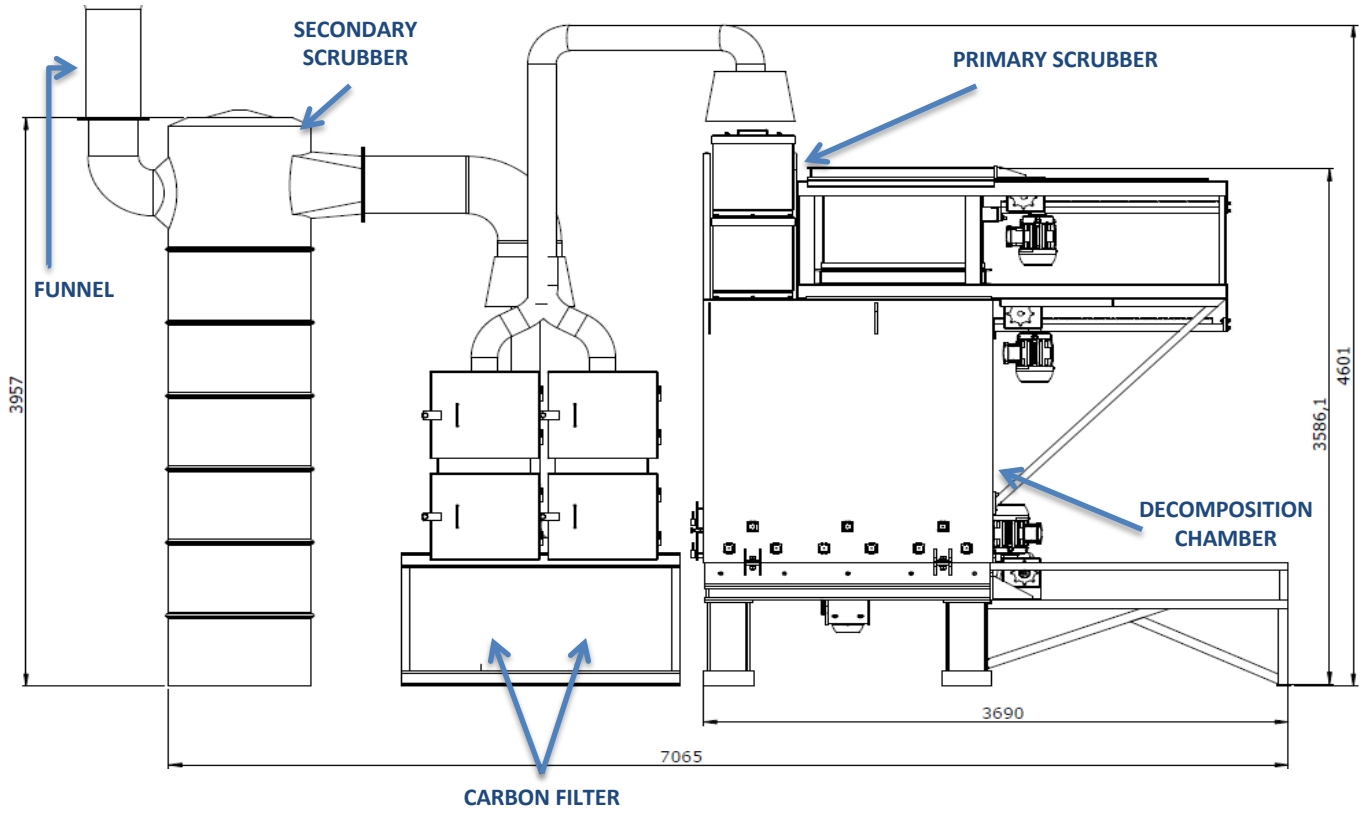
Due to its capacity feature, size and weight, the equipment can easily attend the needs of small cities, even countries (e.g. Luxembourg) and can favorably be deployed in remote territories, which lay outside of the optimal operations range of large industrial plants.

The "low-cost" feature allows the OXYSCLEAN® device to be acquired by countries, which previously have been forced to resort to risky landfill practices.

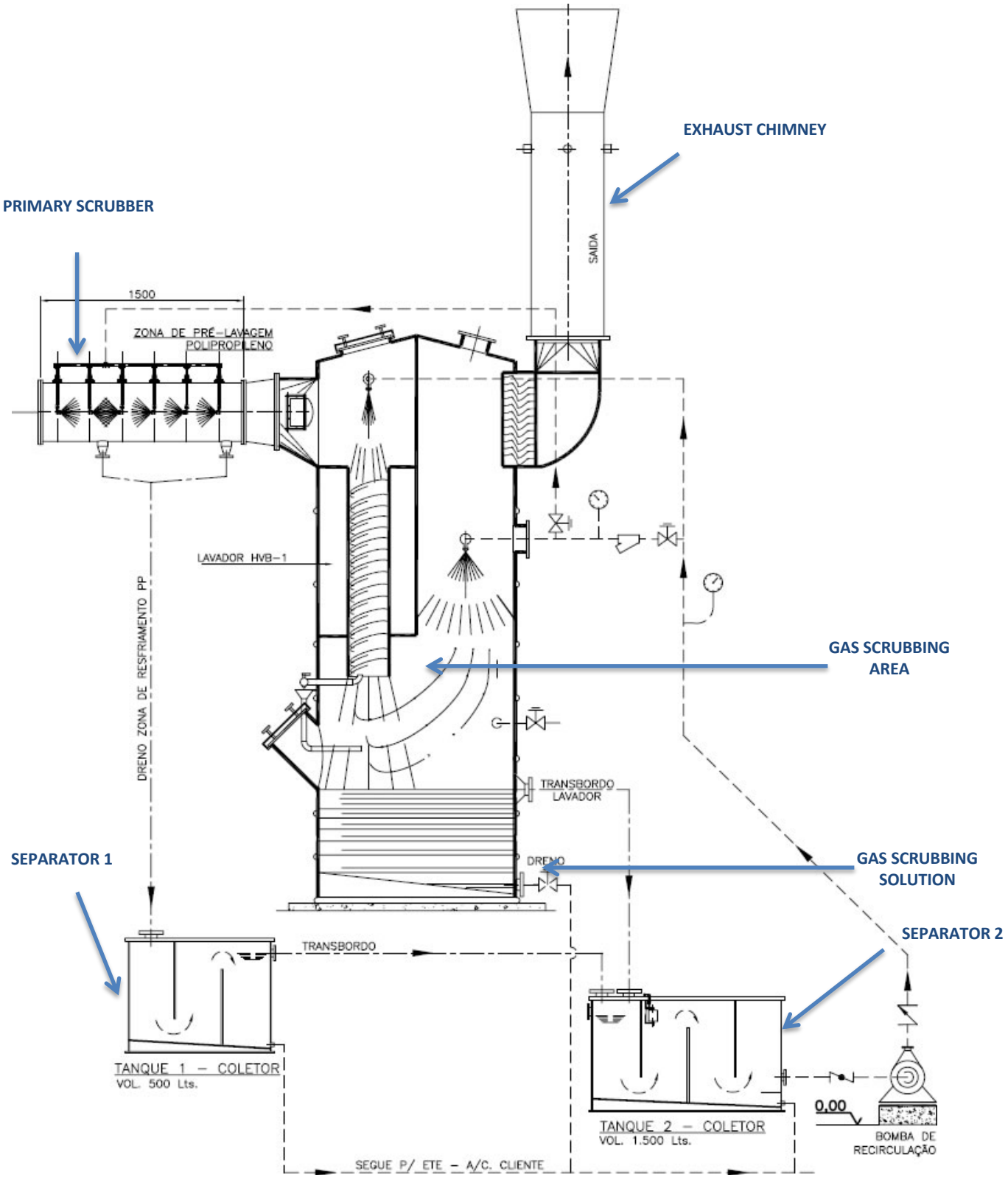
Its simplicity allows it to be deployed within 2-4 days' time, allowing it to be put in use in cases of medical emergencies.

The price of current version of the decomposer is of around 550.000,00€, ex-works (including the usage rights for 5 years).

- **Technical description:**



- **BASIC SCHEME OF THE GAS CLEANER:**


EXHAUST CHIMNEY
PRIMARY SCRUBBER
SAIDA
1500
ZONA DE PRÉ-LAVAGEM
POLIPROPILENO
LAVADOR HVB-1
DRENO ZONA DE RESFRIAMENTO PP
GAS SCRUBBING AREA
TRANSBORDO LAVADOR
DRENO
GAS SCRUBBING SOLUTION
SEPARATOR 1
SEPARATOR 2
TRANSBORDO
TANQUE 1 - COLETOR
VOL. 500 Lts.
TANQUE 2 - COLETOR
VOL. 1.500 Lts.
0,00
BOMBA DE RECIRCULAÇÃO
SEGUE P/ ETE - A/C. CLIENTE

1. TECHNICAL CARACTERISTICS OF THE DECOMPOSITION MODULE (current version)

- 1.1- Power supply: 220V Three phase for opening motors and vibrators;
- 1.2- Weight of equipment: approx. 4 TON
- 1.3- Super magnet set: 30 pairs
- 1.4- Oxygen absorption points: 30 points
- 1.5- Thermocouples: 01 pair on each side of the decomposition chamber
- 1.6- Volumetric capacity of the decomposition chamber: 5.83m³
- 1.7- Form of supply: by batch / cycle
- 1.8- Frequency of supply: 1 h - 3 h, varying according to the characteristics of the waste and blend
- 1.9- Supply / batch volume: ~ 0.5 m³ - approx. 300 Kg
- 1.10- Production capacity: 3 to 4 t / shift
- 1.11- Maximum moisture content accepted for decomposition: ≤ 30%
- 1.12- Motors: 04 motors totally closed and with external ventilation - insulation class "F" - Protection IP 55 - 2,0 hp - 3500 R.P.M. - 220/760 Volts – 50/60 Hz
- 1.13- Exhaust fan: 01 motor totally closed and with external ventilation - class "F" insulation - Protection IP 55 - 3,0 hp - 3500 R.P.M. - 220/760 Volts – 50/60 Hz

2. VENTURY GAS SCRUBBING SYSTEM

- 2.1- Power supply: 220V Three phase
- 2.2- Nominal output of the system: 3,200 Nm³ / h
- 2.3- System pressure: 40 m.m.c.a
- 2.4- Diameter: 900 mm
- 2.5- Cylindrical height: 3.900 mm
- 2.6- Pump: FRP housing, UHMW rotor, stainless steel shaft, UHMW shaft glove, vertical mount, driven by electric motor
- 2.7- Motor: Fully enclosed External Ventilation - class "F" insulation - Protection IP 55 - 15.0 HP - 3500 R.P.M. - 220/760 Volts - 60 Hz
- 2.8- Chimney diameter: 400 mm
- 2.9- Chimney height: 3,000 mm
- 2.10- Noise: 65db
- 2.11- Gas-liquid contact time: 1.5 seconds
- 2.12- Liquid / gas ratio: 6 liters per m³ of air
- 2.13- Surface of the gas-liquid contact: 12m² per liter of ejected liquid
- 2.14- Supplies needed for cleaning: Water, Sodium Hydroxide and Activated Carbon
- 2.15- Scrubbing solution: Sodium hydroxide, Water
- 2.15.1-Concentration: 1:70
- 2.16- Consume Water / kg of decomposed residue: 90,8 ml > 114,3 ml/h
- 2.17- Consume Sodium Hydroxide / kg of decomposed residue: 1.2 ml
- 2.18- Consumes active carbon / kg of decomposed residue: 1,80 g

3. GENERAL INFORMATION

- Required area for installation of the set (Decomposer + Gas scrubber): 90m²

- Total installed capacity Decomposer: 06.10 KW/H (Electric energy)
- Total installed capacity gas scrubber: 14.09 KW/H (Electric energy)
- Human resource requirements: Operator: 02
- Transportation: 1 x 40' container

COMPONENTS OF THE EQUIPMENT MAINTENANCE

ITEM	PERIODICITY	MAINTENANCE TYPE
Rack	Fortnightly	Lubrification
Motor reducers	Fortnightly	Lubrification, check physical structure
Exhaust Hood	Fortnightly	Lubrification, check physical structure
Weight cells	Annually	Functioning, calibration
Electrical parts	Quarterly	Revision of current and voltage
Rubber seals	Monthly	Check physical structure, efficiency
Super-magnets	Annually	Replacement
Thermocouples	Quarterly	Functioning, calibration

4. PROCESS WASTE: ASHES

- Characterization of the ashes: Ceramic dust - Class IIA according to ABNT NBR 10004: 2004
- Volumetric reduction of decomposed waste: ~ 87% to 96%
- Specific weight of the ash: 500 kg / m^3
- Final destination of the ash: Recycling for concrete flooring, construction block, curb.

5. ANALISIS OF ATMOSPHERIC EFFLUENTS

The process of thermal decomposition generates reduced volume of gaseous emissions, composed mainly of water vapor with low odor, and particles, in all cases conform to EU legal requirements.

Technical reports performed by survey company CHAMINÉ (www.chaminesolucoes.com.br)
Latest test report: Octobre 2019, obtainable upon request (info@oxys.lu).

6. VIEWS OF EQUIPMENT