

# *SCRUBBERS*



# SCRUBBERS

The EUROPE ENVIRONNEMENT GROUP produces a truly unique package of products from biological treatment to chemical scrubbing and carbon adsorption units.

By using the latest CAD/CAM technology we retain control of all our facilities in-house, design, manufacture, testing, installation, commissioning and training.

From concept to completion, Europe Environnement's service can include the design of the fume capture and extraction system, chemical and mechanical engineering of the fume scrubbing unit and the installation and commissioning of the plant to an agreed discharge concentration.

Business sectors catered for include Chemical, Aeronautical, Micro-electronics, Metal Surface Plating, Metal Processing, Pharmaceutical, Food Processing, Sewage Treatment Works and special supply sector.

Our equipment Plants are manufactured using state of the art corrosion-resistant materials such as Polypropylene, HDPE, PVC, PVDF etc.

## **COST EFFECTIVE HIGH QUALITY SOLUTIONS**

Our in-house design capabilities along with our in-house manufacturing capabilities mean that our solutions are cost-effective also delivery timescales and quality are fully under our control.

We endeavour to offer a cost-effective response to every enquiry, however large or small.

## **POLLUTION**

Fume scrubbing systems for odour control and industrial acid gases

## **INDUSTRY**

The protection of the environment, particularly with respect to air quality, is a major issue.

We design and supply scrubbing plants to ensure that industrial emissions are in line with the required standards.

Wet chemical scrubbing, including packed towers, spraying gas scrubbers and venturi scrubbers, and covers the widest range of duties. The process can accommodate high airflows (up to 100,000 m<sup>3</sup>/hour can be treated in a single unit), and both constant and intermittent contaminant loads.

# METAL SURFACE PLATING

## Surface Treatment

There are two major problems in the surface treatment industry.

### 1. Extraction from surface treatment baths

From concept to completion, Europe Environnement's service can include the design of the fume capture and extraction system.

There are several types of extraction systems:

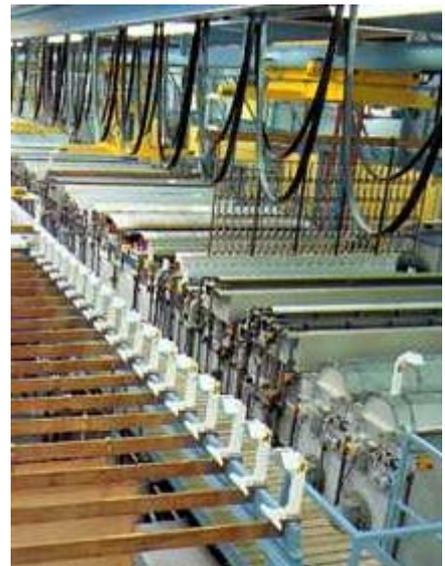
- single-side lipextraction
- two-side lipextraction
- push/pull extraction

It should be noted that certain gas mixtures are prohibited: such as acid and cyanides.

### 2. Compliance with gas emissions requirements

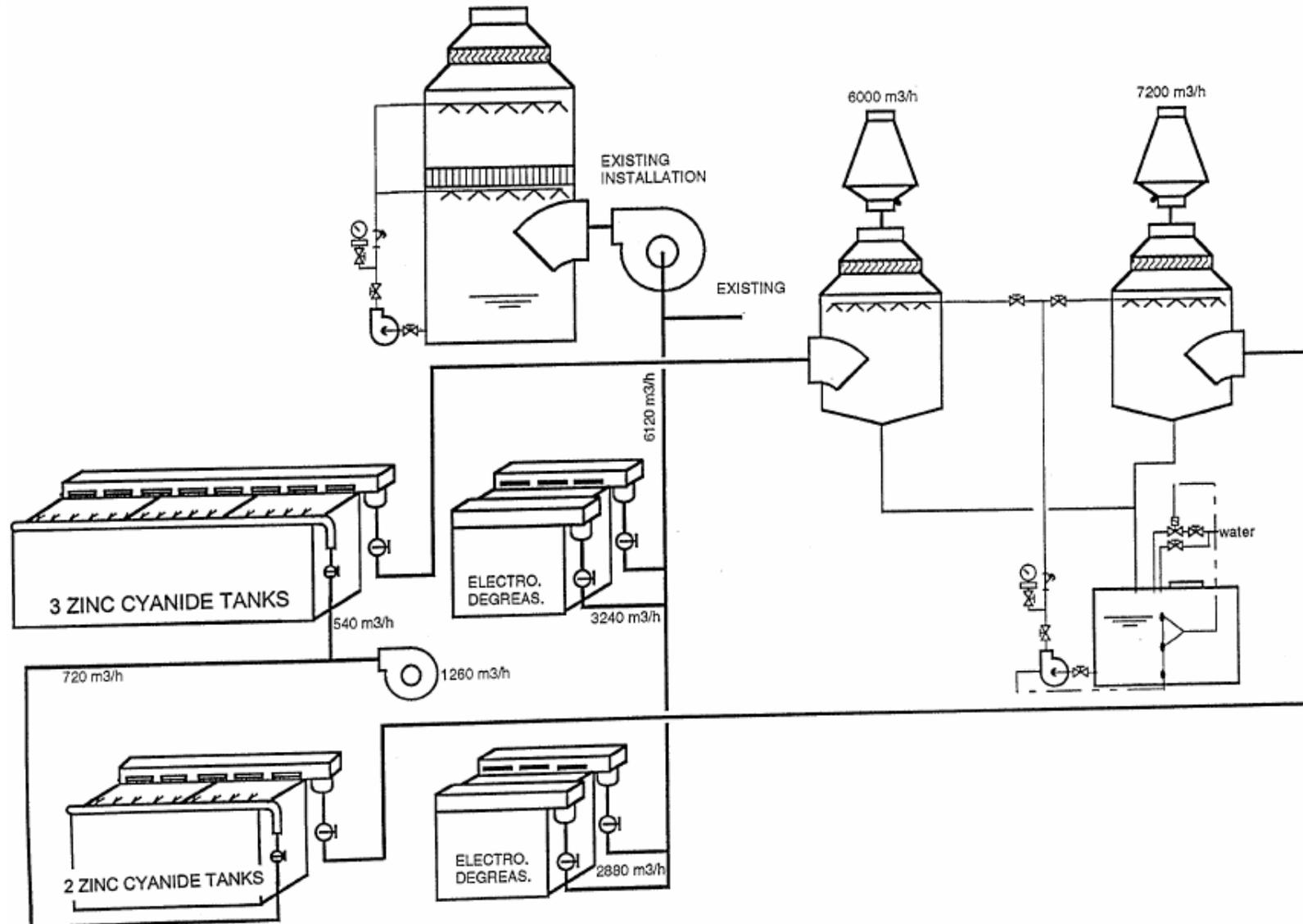
Target emission levels set by local authorities get ever more stringent and we are always looking to apply the most effective and efficient technologies to help our customers meet their obligations.

Spray gas scrubber provide simplicity and eased operation, while enabling industrial emissions to be in line with required standards. Spray scrubbers can be designed for relatively high efficiencies with relatively low capital and running costs. The corrosion-proof material used allows this equipment to be installed outdoors.





# METAL SURFACE PLATING – SURFACE TREATMENT



# CHEMICAL INDUSTRY

## Absorption systems and spray scrubbers

Increasingly severe emissions regulations require increasingly innovative solutions.

Europe Environnement offers a complete range of thermoplastic fume scrubbing units backed by a comprehensive design, manufacturing and installation service.

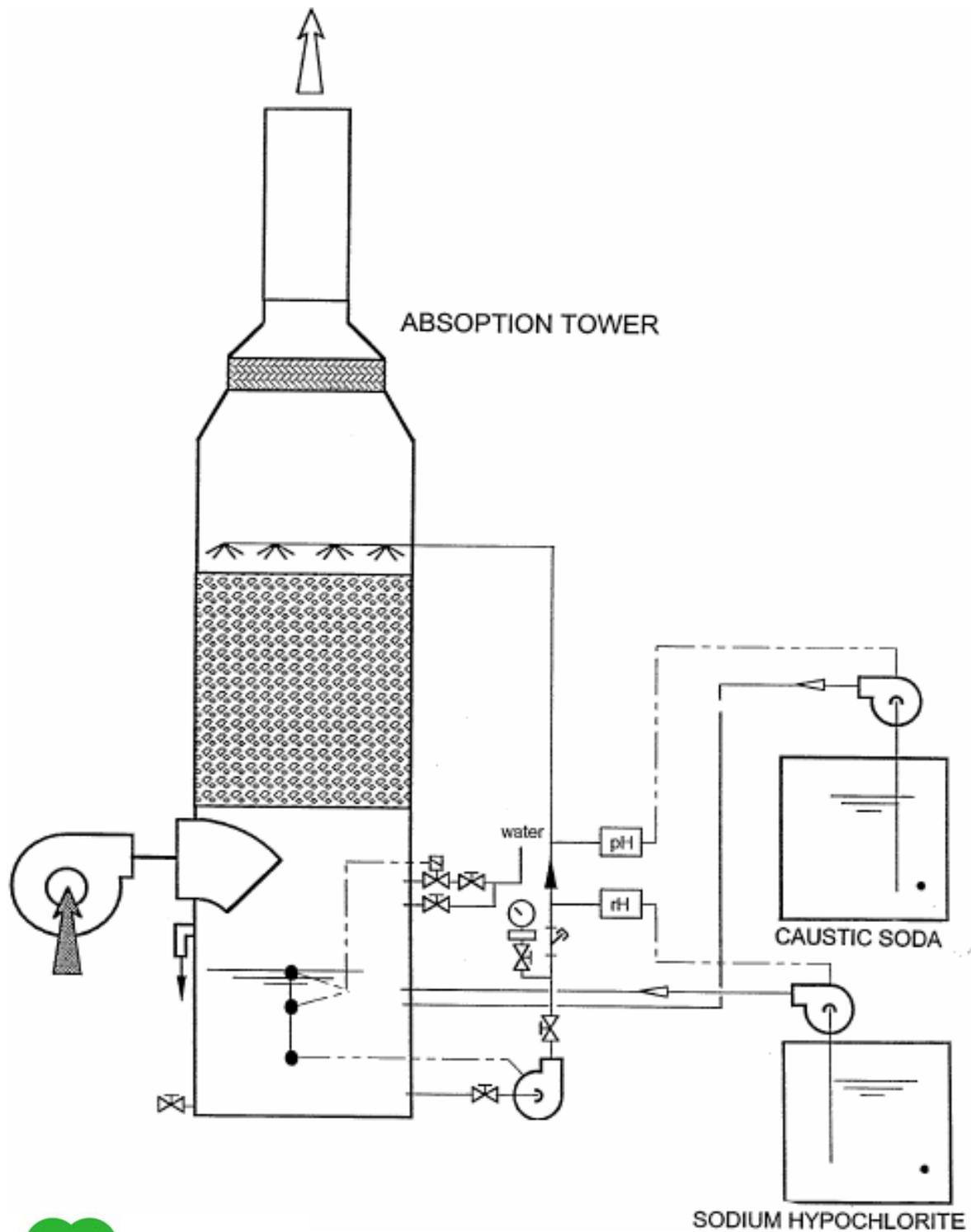
Environmental technologies available:

- Packed columns
- Spray scrubbers
- Venturi scrubbers
- Horizontal cross flow scrubbers

Processes involve the use of absorption towers with reactants such as: sodium hydroxide, potassium, hydrogen peroxide or combined reactants such as caustic soda and bleach.

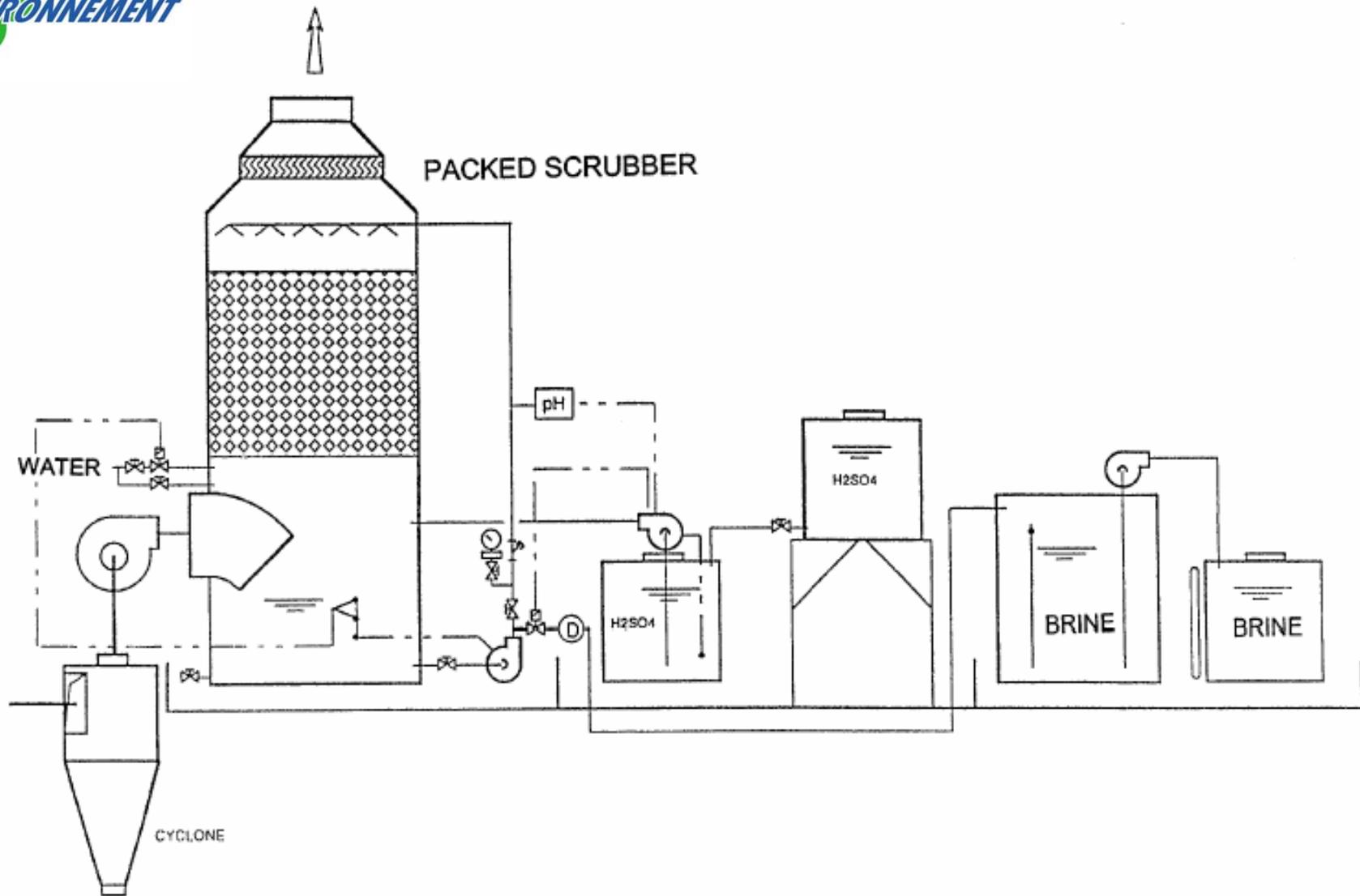
We design and supply plant to ensure that industrial emissions are in line with the required standards. The maximum permissible emissions level may be achieved by connecting several towers in series, depending on the inlet concentration.

# CHEMICAL INDUSTRY – PACKING SCRUBBER





# ABSORPTION – DMEA



# ODOUR CONTROL APPLICATIONS

## Food and Animal Processing Industries

Food processing and animal processing industries are increasingly including deodorizing as the final step of their overall process.

A great variety of elements of various types are involved.

These primarily include:

- a. Dust
- b. Nitrogenous compounds :amines and ammonia
- c. Sulphurous compounds :hydrogen sulphide and mercaptans
- d. Oxygenous compounds: Acids, ketones, aldehydes and butyric acids.

The various types are treated in separate scrubbers in each processing area using different chemical reactants. The first treatment may simply involve water to remove dust.

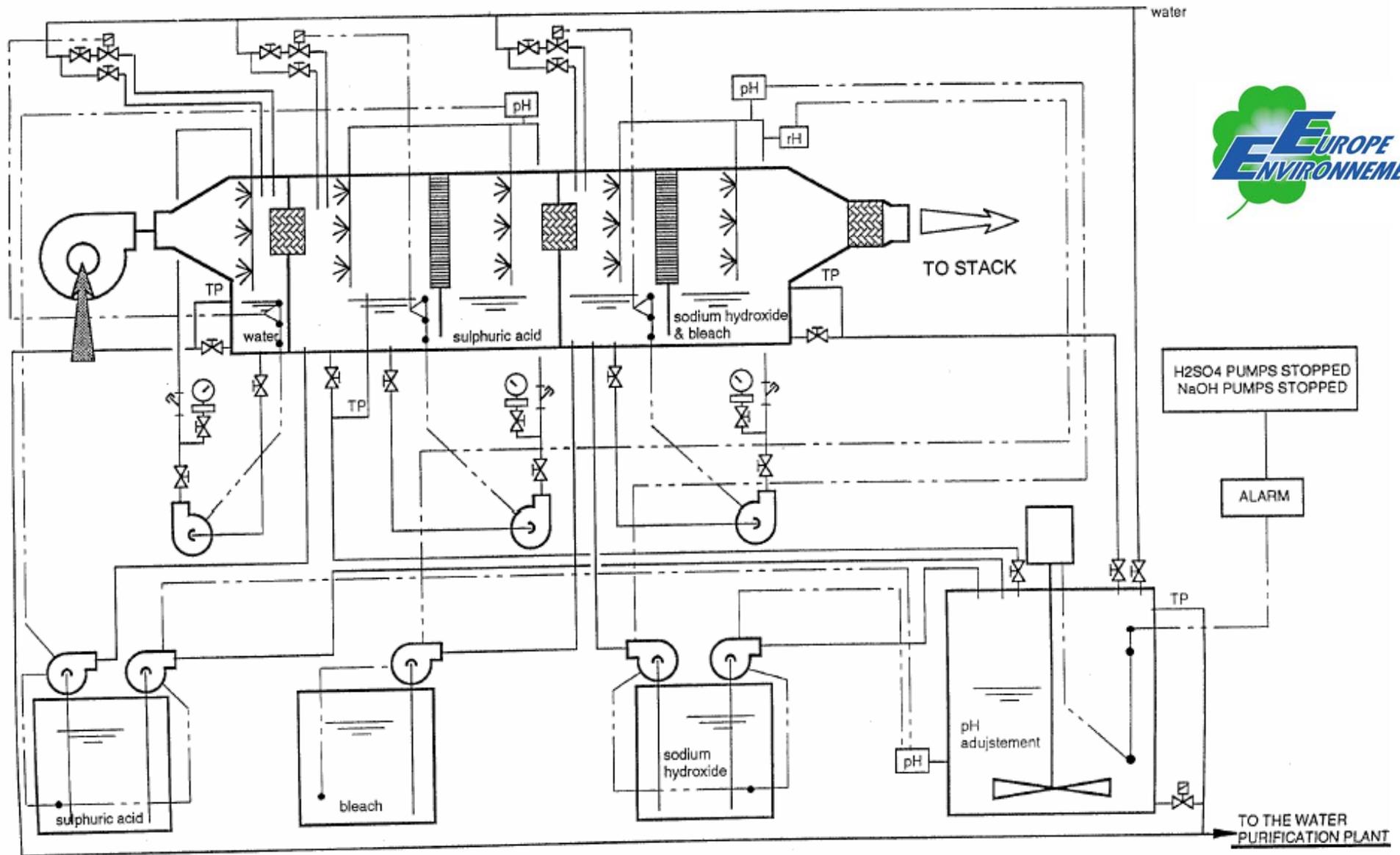
It is also necessary to install buffer water treatment tanks to remove waste water to a water treatment plant or to foul water treatment system.

### Indication of odour hires holds

For example:

* H <sub>2</sub> S	:	0.0001 to 0.03 mg/Nm <sup>3</sup> air
* Methymercaptan	:	0.0005 to 0.08 mg/Nm <sup>3</sup>
* Ammonia	:	0.5 to 37 mg/Nm <sup>3</sup>
* Dimethylamine	:	0.047 to 0.16 mg/Nm <sup>3</sup>
* Butyric acid	:	0.004 to 3 mg/Nm <sup>3</sup>
* Formaldehyde	:	0.033 to 12 mg/Nm <sup>3</sup>
* Acetone	:	1.1 to 240 mg/Nm <sup>3</sup>

# FOOD AND ANIMAL PROCESSING INDUSTRIES – ODOUR CONTROL



# ODOUR CONTROL APPLICATIONS

## Sewage Treatment Works

The collection and processing of sewage and industrial waste water is often a source of unpleasant odours. This water contains dissolved organic material and particles, nitrogenous compounds (including ammonia) and phosphorous whose purification by-products (sludge and grease) may directly or indirectly cause unpleasant odours due to the biological process of fermentation which occurs in oxygen-deprived media.

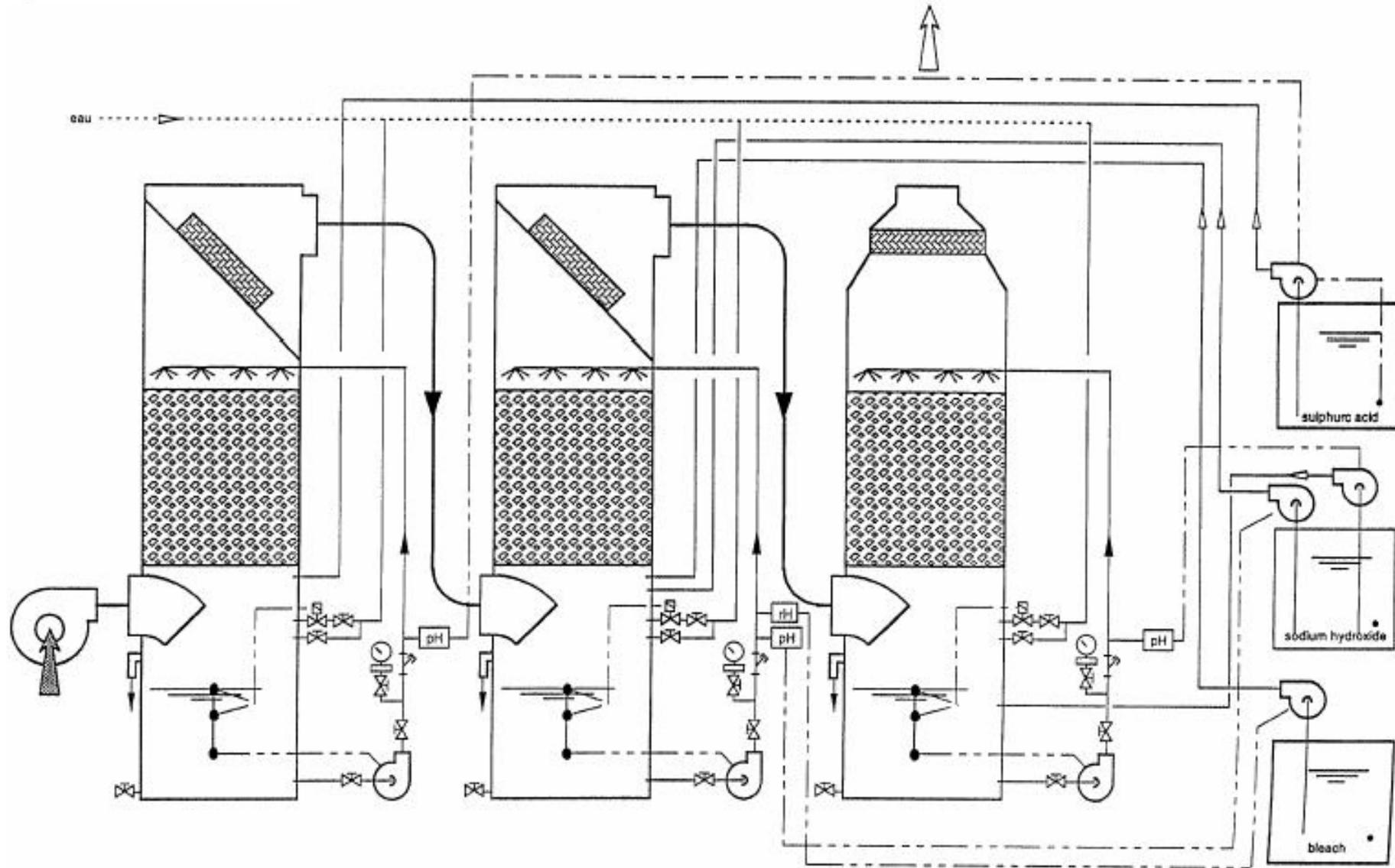
These odours are very strong, but once air is extracted from the various critical points, scrubbing technology enables very effective deodorizing.

The different types of compounds are treated using separate packed towers or horizontal crossflow scrubber.

1. The first scrubbing tower removes ammonia and amines using sulphuric acid.
2. The second scrubbing tower removes hydrogen sulphide and mercaptans using sodium hypochlorite and caustic soda.
3. The last scrubbing tower (optional) is a polishing tower to complete the removal of hydrogen sulphide and mercaptans using caustic soda only.

A final polishing stage using activated carbon may be used.

## ODOUR CONTROL APPLICATION – SEWAGE TREATMENT WORKS



# VERTICAL SPRAY GAS SCRUBBER



This equipment is recommended for surface treatment or chemical applications, depending on the products treated and the concentration of gases to be extracted.

It is particularly appreciated for its compact size, low pressure loss and high efficiency.

The process involves establishing maximum contact between liquid and gas using a fine, intense spray with a high-efficiency exchange screen separating each section.

The scrubber is equipped with a demister at the top which will remove most of the mist produced by the spraying.

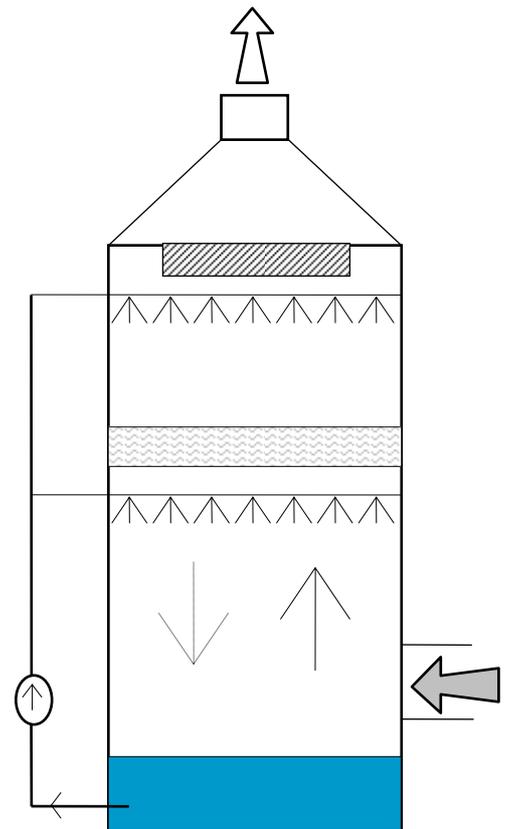
The scrubber is supplied complete with its spraying circuit, recycling pump, recirculation tank, automatic water supply and level controls.

For surface treatment applications, special scrubbers are used for each type of gas to be treated:

- cyanides
- acids
- phosphate
- chrome plating

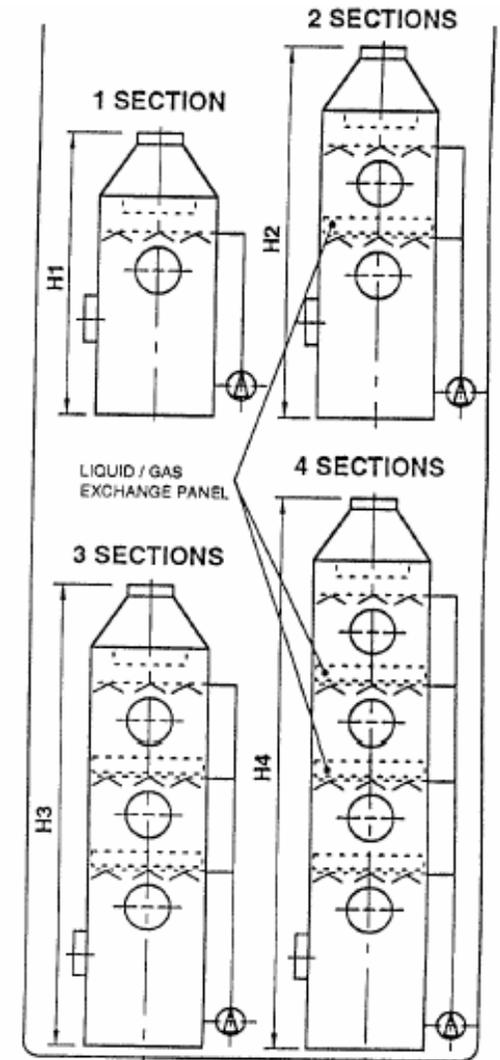
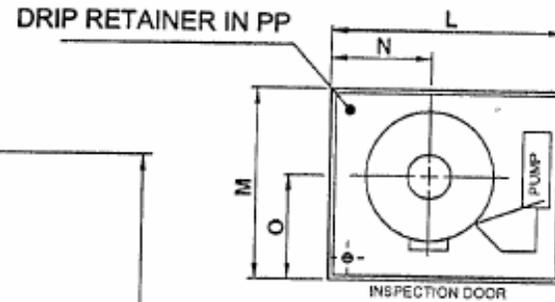
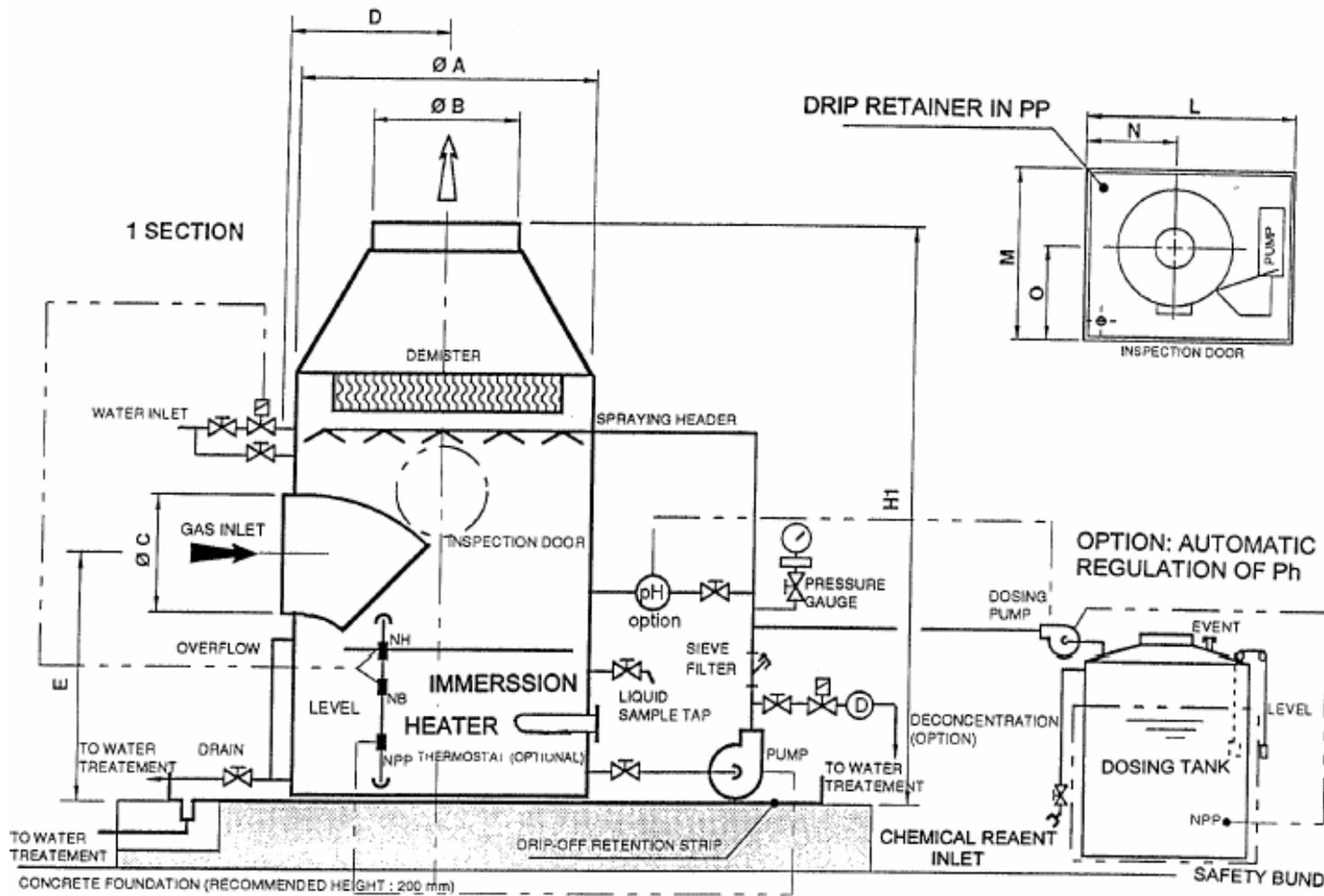
Chemical reactants will be added according to the results required. An optional regulation system with PH meter and metering pump may be provided. This device is extremely easy to service and is impervious to corrosion.

Major structural parts are made of PP or HDPE for outdoor installation.





# SPRAY GAS SCRUBBER – LPV





## SPRAY GAS SCRUBBER – LPV

SIZE	FLOW RATE m3/h	ØA mm	ØB mm	ØC mm	D mm	E mm	H1 mm	H2 mm	H3 mm	H4 mm	BOTTOM TANK VOL(1)	DRIP RETAINER			
												L mm	M mm	N mm	O mm
470	780/1560	470	200	200	355	1074	2793	3021	4021	5021	139	1190	820	435	435
700	1730/3465	700	315	355	470	1258	3154	3424	4424	5424	308	1420	1050	550	550
940	3125/6245	940	400	400	590	1253	3402	3665	4665	5665	555	1690	1290	670	670
1250	5520/11045	1250	450	560	745	1671	4018	4312	5312	6312	982	2000	1600	825	825
1400	6930/13855	1400	630	630	900	1715	4072	4425	5425	6425	1232	2150	1750	900	900
1600	9050/18095	1600	710	710	1000	1768	4218	4538	5538	6538	1608	2550	1950	1100	1000
1900	12760/25520	1900	900	900	1150	1891	4528	4897	5897	6897	2268	2850	2250	1250	1150
2200	17105/34210	2200	1000	1000	1300	1955	4865	5220	6220	7220	3041	3250	2550	1400	1300
2500	22090/44180	2500	1120	1120	1450	2200	5321	5756	6756	7756	3927	3550	2850	1550	1450
2850	28710/57415	2850	1300	1250	1625	2420	5853	6218	7218	8218	5104	3900	3200	1725	1625
3500	43295/86590	3500	1600	1600	1950	3358	7266	7690	8690	9690	7697	4600	3850	2050	1950
4000	56550/113100	4000	1800	1800	2200	3803	8071	8565	9565	10565	10053	5100	4350	2300	2200

SIZE	PUMPS							
	1 SECTION		2 SECTIONS		3 SECTIONS		4 SECTIONS	
	m3/h	KW	m3/h	KW	m3/h	KW	m3/h	KW
470	1	2,2	2	2,2	3	3	4	3
700	1,5	2,2	3	3	4,5	3	6	3
940	2,5	2,2	5	3	7,5	3	10	3
1250	4	3	8	3	12	4	16	4
1400	5	3	10	3	15	4	20	4
1600	6	3	12	3	18	4	24	5,5
1900	8	3	16	4	24	5,5	32	7,5
2200	12	4	24	5,5	36	7,5	48	11
2500	15	4	30	5,5	45	11	60	15
2850	19	5,5	38	7,5	57	15	76	18,5
3500	29	7,5	58	11	87	22	116	22
4000	38	7,5	76	18,5	114	22	152	30

SIZE	WEIGHT			
	1 SECTION	2 SECT.	3 SECT.	4 SECT.
	KG	KG	KG	KG
470	220	235	250	264
700	440	467	490	512
940	768	812	849	886
1250	1604	1662	1721	1772
1400	1993	2067	2139	2221
1600	2612	2705	2794	2904
1900	3691	3849	4018	4149
2200	4916	5109	5296	5499
2500	6347	6598	6845	7067
2850	8306	8630	8964	9244
3500	12563	12957	13450	13872
4000	16361	16856	17502	18091

IMMERSSION HEATER (OPTION)	
SIZE	KW
470	0,5 mono
700	1,5 tri
940	1,5 tri
1250	1,5 tri
1400	1,5 tri
1600	3 tri
1900	3 tri
2200	3 tri
2500	4,5 tri
2850	4,5 tri
3500	6 tri
4000	9 tri

NONE OF THE INFORMATION IN THIS GUIDE IS CONTRATUAL AND IT MAY BE MODIFIED AT ANY TME WITHOUT NOTICE

# HORIZONTAL SPRAY GAS SCRUBBER

This mode is used for reasons of size, space availability or combined treatment.

The horizontal scrubber is easy to access: all parts are within arm's reach.

It is very compact and can be installed in confined spaces where there is insufficient head room for vertical tower.

Efficiency is generally equivalent to that of a vertical scrubber.

Its simple design allows several scrubbers to be connected in series to form a multi-stage scrubber which is particularly effective for deodorizing.

In this case, demisters separate each treatment stage, and separate recirculation tanks are used.

Its box shape can easily be adapted to customer space requirements and enable installation in areas that were not initially planned for vertical scrubbers.

An inspection port at eye level is provided to check it's operation.



## HORIZONTAL SPRAY GAS SCRUBBER – LPH

