

*ENVIRONMENTAL PROTECTION  
EQUIPMENT FOR WASTE GAS*

“ FRP Package Type “

# **GAS SCRUBBER**

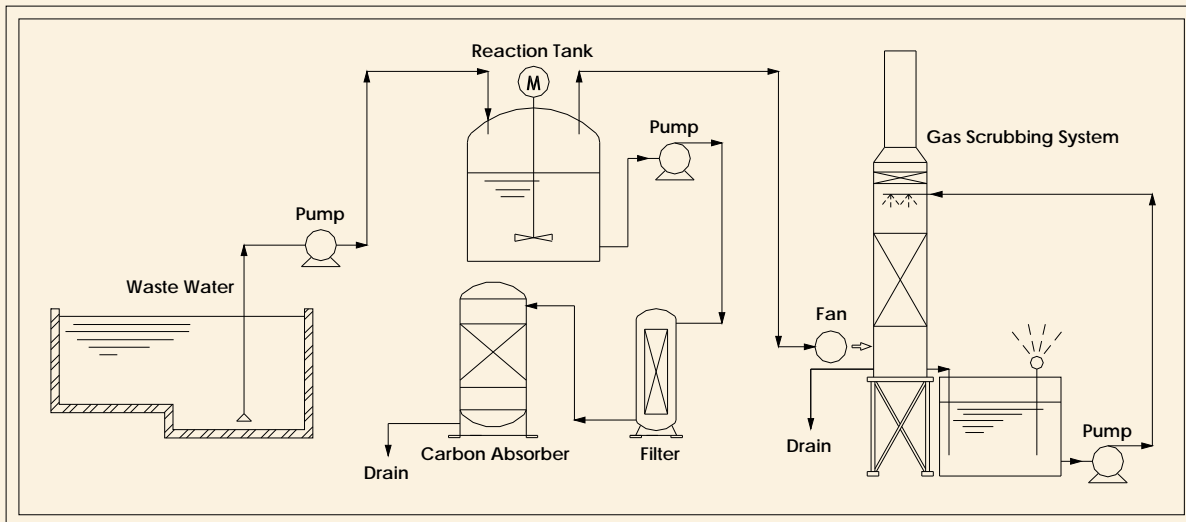
**MADE IN INDONESIA**



# SIKO'S ENVIRONMENTAL PROTECTION PRODUCTS

KEEP THE AIR ALWAYS FRESH TO MAKE  
THE WORLD MORE LIVABLE

Environment protection devices and equipments are playing a vital role in the treatment of exhaust gases, which are generated in almost all types of industries. In our capacity as an Engineering and Consulting company, Siko made its best endeavour to design and to produce an equipment called Gas Scrubbing System, which is generally used to clean polluted gas.



## Diagram of Scrubbing System on Waste Water Treatment Plant

Siko's product are new and unique in design that reflect our high technology supported by expatriates with the back up of constant research and development. When designing the scrubbing system, our engineers always aim to produce :

- high quality product,
- high performance,
- more compact package,
- long life expectancy.

We are glad that we have successfully achieved these important goals, giving you an ideal equipment to meet every specification and requirement of your scrubbing system.

Siko's Gas Scrubbing Unit mostly use local parts. It might become an advantage to have our quick response and complete the equipment supply to your site.

By using our product means saving much more energy and money, because our parts and components will guarantee its high performance and efficiency.

Siko's Gas Scrubbing System (S-AT) offers two Standard models :

- Single stage scrubbing system (S-AT-A\*)
- Double stage scrubbing system (S-AT-B\*)

We also produce other environmental protection equipment such as :

- SO<sub>x</sub>, NO<sub>x</sub>, Gas treatment Equipment
- Deodorization Treatment Equipment

## FEATURE OF GAS SCRUBBER

### Compact package type

The main body of both Scrubbing Tower and Circulation Tank are made of FRP, molded into a single unit. Since the fan and pump are supplied as a set of equipment from the manufacturing plant, the installation work on site can be completed easily only in one or two days. Even the large size models, starting with S-AT-A150, are delivered in installments. Installation can be also carried out easily, since the connection are made with bolts.



### Anti corrosion

The successful application of any corrosion resistant material begins with a complete and accurate definition of the liquid to be handled. For our standard type, based on the result of a long time research, we use "Vinyl Ester Resin" for the FRP tower and tank. Compare with other materials, this type of resin have a stronger resistance against chemical agent within reasonable temperature range. However, we will accept any special order.

### FRP Tower Manufacturing

#### Stripping efficiency

Gas	Molecular Formulary	Washing Liquid	Stripping Efficiency
Sulfur dioxide	(SO <sub>2</sub> )	NaOH	95%
Chlorine gas	(Cl <sub>2</sub> )	NaOH	95%
Ammonia	(NH <sub>3</sub> )	H <sub>2</sub> SO <sub>4</sub> /H <sub>2</sub> O	95%
Hydrogen sulfide	(H <sub>2</sub> S)	NaOH	95%
Hydrogen Chloride	(HCl)	H <sub>2</sub> O	90%

## SINGLE STAGE TYPE

(S – AT - A20 – S –AT – A300)

### GENERAL APPLICATION :

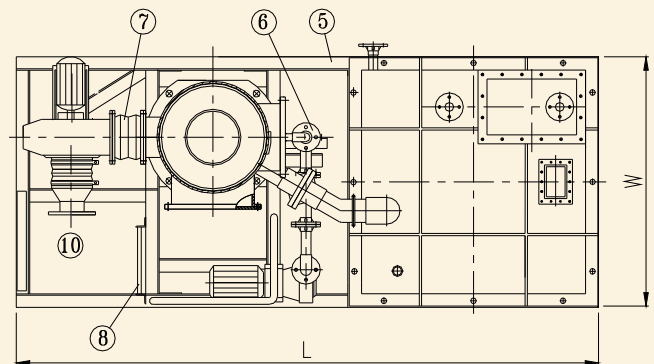
General purpose is to handle acid gas such as H<sub>2</sub>S, SO<sub>2</sub>, HF, Cl.

NaOH washing single stage.

This is applicable to various industrial field such as chemical, fertilizer, textile, metal processing factory, etc.

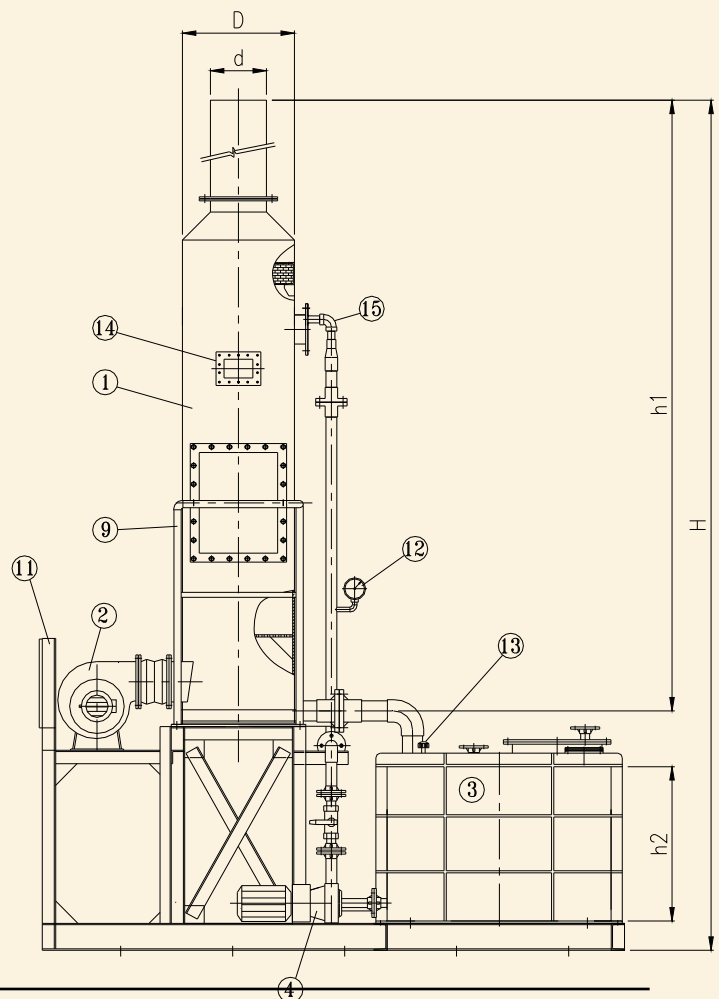
This type has a function of high efficiency scrubbing system where any kind of acid gas is treated and neutralized by NaOH Solution circulating in a tower.

A continuous operation is possible by means of controlling the NaOH concentration in the solution.



### MAIN PART MATERIALS

NO	DESCRIPTION	MTL	QTY
1	Scrubbing tower	FRP	1
2	Exhaust fan	PP	1
3	Circulation tank	FRP	1
4	Circulation pump	PVC/SUS	1
5	Frame support	SS400	Ls
6	Piping line & valve	PVC	Ls
7	Flexible duct	Rubber	1
8	Ladder	SS400	Ls
9	Handrail & platform	SS400	Ls
10	Suction flange	PVC	1
11	Control panel	Fiber	1
12	Pressure gauge	1	
13	Level gauge	1	
14	Sight glass	1	
15	NaOH spraying inlet	1	



## DOUBLE STAGE TYPE

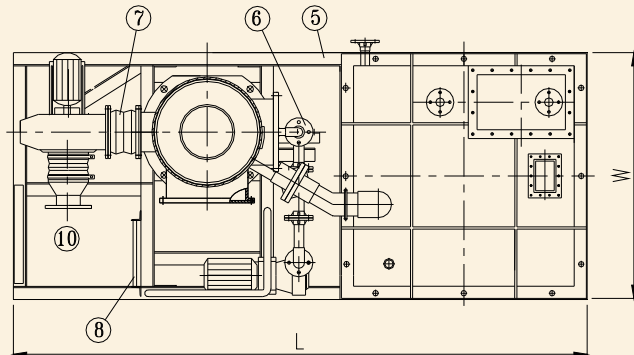
(S – AT – B60 – S –AT – B300)

### GENERAL APPLICATION :

This scrubber can be used in general deodorizing system for the strips odors generated from activated sludge process in sewage treatment and so on.

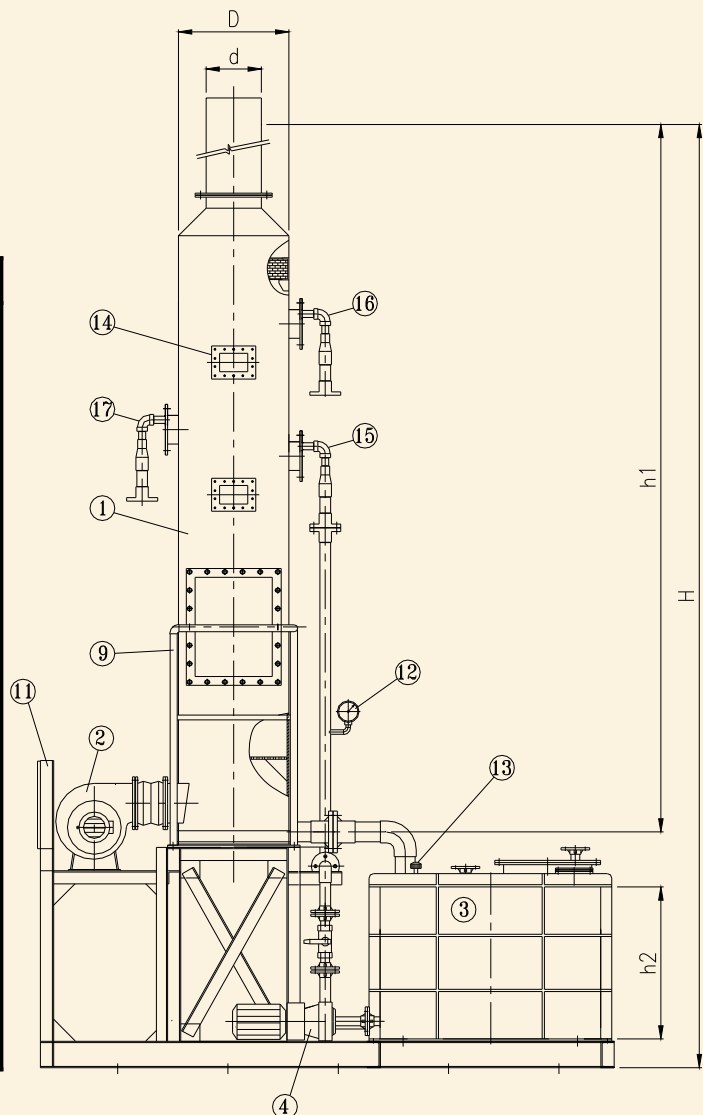
It consists of two stages processing in a tower, one is for H<sub>2</sub>S or Cl<sub>2</sub> treatment and by another is for NH treatment by H<sub>2</sub>O.

This scrubber has an excellent performance to treat the gases because both gas contents can be reduced to less than 3 ppm in case of NH, and less than 0,5 ppm in case of H<sub>2</sub>S.



### MAIN PART MATERIALS

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1	Scrubbing tower	FRP	1
2	Exhaust fan	PP	1
3	Circulation tank	FRP	1
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5	Frame support	SS400	Ls
6	Piping line & valve	PVC	Ls
7	Flexible duct	Rubber	1
8	Ladder	SS400	Ls
9	Handrail & platform	SS400	Ls
10	Suction flange	PVC	1
11	Control panel	Fibre	1
12	Pressure gauge		1
13	Level gauge		1
14	Sight glass		2
15	NaOH spraying inlet	PVC	1
16	H <sub>2</sub> O spraying inlet	PVC	1
17	H <sub>2</sub> O spraying drain	PVC	1



## SINGLE STAGE TYPE

MODEL	S-AT-A20	S-AT-A40	S-AT-A60	S-AT-A80	S-AT-A100	S-AT-A150	S-AT-A200	S-AT-A250	S-AT-A300
<b>DIMENSION</b>									
L (mm)	2630	2835	3210	3415	3800	4090	4360	4650	4840
W (mm)	1120	1200	1300	1500	1600	1800	2000	2300	2500
H (mm)	4330	4450	4730	4910	5250	5440	5820	6320	6500
h1 (mm)	3300	3420	3650	3830	4070	4210	4490	4800	4900
h2 (mm)	700	700	750	750	800	800	900	1000	1000
D (mm)	500	650	800	1000	1200	1400	1600	1800	2000
d (mm)	250	300	400	500	550	650	750	850	900
<b>SPECIFICATION</b>									
Flow (m <sup>3</sup> /min)	20	40	60	80	100	150	200	250	300
<b>Pump</b>									
- Size (inch)	1.5	1.5	1.5	2	2	2.5	2.5	3	3
- Capacity (l/min)	60	100	125	200	200	400	400	600	600
- Head (m)	10	10	10	10	15	15	15	15	15
- Motor (kW)	0.4	0.75	0.75	0.75	1.5	2.2	2.2	3.7	3.7
<b>Fan</b>									
- Gas q'ty (m <sup>3</sup> /min)	20	40	60	80	100	150	200	250	300
- St pressure (mmAq)	75	75	75	75	75	75	75	75	75
- Motor (kW)	0.75	1.5	2.2	3.7	3.7	3.7	5.5	5.5	7.5
<b>Tank capacity (l)</b>	500	700	1000	1200	1500	1800	2000	2500	3000
<b>Weight</b>									
- Actual (kg)	270	380	510	610	725	790	900	1030	1150
- Operating (Kg)	770	1080	1510	1810	2225	2590	2900	3530	4150

Note : Dimension (D) and (d) has square shape for type A100 and more.

## DOUBLE STAGE TYPE

MODEL		S-AT-B60	S-AT-B80	S-AT-B100	S-AT-B150	S-AT-B200	S-AT-B250	S-AT-B300
<b>DIMENSION</b>								
L (mm)		3210	3415	3800	4090	4360	4650	4840
W (mm)		1300	1500	1600	1800	2000	2300	2500
H (mm)		4230	4910	5250	5440	5820	6320	6500
h1 (mm)		3650	3830	4070	4210	4490	4800	4900
h2 (mm)		750	750	800	800	900	1000	1000
D (mm)		800	1000	1200	1400	1600	1800	2000
d (mm)		400	500	550	650	750	850	900
<b>SPECIFICATION</b>								
Flow (m <sup>3</sup> /min)		60	80	100	150	200	250	300
<b>Pump</b>								
- Size (inch)		1.5	2	2	2.5	2.5	3	3
- Capacity (l/min)		125	200	200	400	400	600	600
- Head (m)		10	10	15	15	15	15	15
- Motor (kW)		0.75	0.75	1.5	2.2	2.2	3.7	3.7
<b>Fan</b>								
- Gas q'ty (m <sup>3</sup> /min)		60	80	100	150	200	250	300
- St pressure (mmAq)		75	75	75	75	75	75	75
- Motor (kW)		2.2	3.7	3.7	3.7	5.5	5.5	7.5
<b>Tank capacity (l)</b>		1000	1200	1500	1800	2000	2500	3000
<b>Weight</b>								
- Actual (kg)		550	650	785	880	980	1120	1250
- Operating (Kg)		1150	1860	2280	2660	2980	3620	4250

Note : Dimension (D) and (d) has round shape all.

TO MEET EVERY REQUIREMENT OF YOUR DUST COLLECTOR SATISFACTORILY,  
PLEASE ATTACHED THE FOLLOWING QUESTIONNAIRE, AFTER FILLING IT UP ANY  
TIME YOU MAKE AN ORDER OR AN INQUIRY

**1. Purpose of scrubbing system**

- a. Kind of factory : .....
- b. Special requirement : .....

**2. Gas properties**

- a. Name of gas : .....
- b. Gas quantity : .....
- c. Gas temperature : .....
- d. Gas contents : .....

(Element)	(%)
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....

**3. Gas Generating Condition**

- a. Gas flow : .....
- b. Dust contained : .....
- Description of dust content
- Kind of dust : .....
- Size : .....
- Quantity : .....

**4. Washing liquid, if required**

(We can assist to chose the suitable liquid according to our experience)  
.....

**5. Operation method**

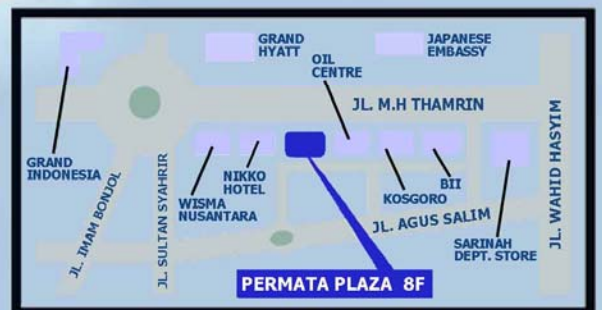
	Direct control panel
	Panel on central room
	Other system

**6. Scope of work required**

.....  
.....

**7. Other particular items, if any**

.....  
.....



**pt. cemara siko engineering indonesia**

**Permata Plaza 8th floor**

**Jl. M.H. Thamrin 57**

**Jakarta 10350, INDONESIA.**

**Tel : 62-21-390 3403**

**Fax : 62-21-390 3405**

**e-mail : corp@siko.co.id**

**http://www.siko.co.id**