

# CO<sub>2</sub> Absorption Bottle with the unique RITTER Dip Pipe System



PRESENTING  
THE ALL-NEW  
UNIQUE RITTER  
DIP PIPE DESIGN  
FOR CO<sub>2</sub> ABSORPTION  
BETTER THAN  
**99%**

**Expect the best!** When CO<sub>2</sub> has to be absorbed from your biogas the RITTER absorption system will do this job for you: The RITTER CO<sub>2</sub> absorption bottles with the unique dip pipe system guarantee an absorption capacity of better than 99%. And you don't even need any absorption indicator!

## Feature highlights

- Absorption bottle with unique dip pipe system
- Absorption rate better than 99%
- Absorption solution KOH 3 mol

# Discover the RITTER CO<sub>2</sub> Absorption System with Absorption Capacities of better than 99%



Ordinary systems for CO<sub>2</sub> absorption lead the biogas into the inside upper part of the absorption bottle, the gas thus wetting the absorption liquid surface. The achievable CO<sub>2</sub> absorption rate is therefore much lower than the optimum of 100%, especially with higher flow rates and/or higher fractions of CO<sub>2</sub>. Advanced systems are operating with a dip pipe leading the gas into the absorption liquid. By bubbling the gas through the liquid, higher absorption rates can be obtained by the larger surface of the gas bubbles in contact with the liquid.

The ultimate advancement of dip pipe systems results in the unique RITTER dip pipe system: The lower end of the dip pipe is designed like a bell, holding the gas within the liquid. Both the large surface of the gas bubble inside of the bell and the length of time that the gas bubble is kept in the bell result in the extraordinary absorption rate of better than 99%.

Another outstanding effect is the fact that the RITTER absorption system can operate without any absorption liquid indicator showing the limit of the absorption capacity. It is a general problem of such indicators that the color doesn't change abruptly but continuously. Therefore, it is difficult for the user to recognize the true limit of the absorption capacity. In contrast to indicator systems the RITTER system guarantees an absorption rate of at least 99% up to reaching the absorption capacity limit. This capacity limit will be indicated by the MilliGascounter by measuring of the volume of methane remaining in the gas stream after absorbing the CO<sub>2</sub>.

## Absorption Capacity

The absorption capacity is that volume of CO<sub>2</sub> which is absorbed until the absorption rate is decreased from 100% (at the beginning) to 99%. – In other words: When the limit of absorption capacity is reached, the gas at the absorption bottle outlet contains 1% of CO<sub>2</sub>.

Table of absorption capacities at various gas flow rates:

		Biogas Input		Flow Rate [ml/h]					
		50	100	200	300	500	750	1000	
CO <sub>2</sub> -absorption capacity, approx [ltr]*	60% CH <sub>4</sub> / 40% CO <sub>2</sub>	13.4	12.1	8.8	7.9	7.8	7.7	7.6	
	40% CH <sub>4</sub> / 60% CO <sub>2</sub>	13.5	11.8	8.9	8.5	8.3	8.0	8.1	
Absorption limit [ltr]**	60% CH <sub>4</sub> / 40% CO <sub>2</sub>	20.1	18.2	13.2	11.9	11.7	11.6	11.4	
	40% CH <sub>4</sub> / 60% CO <sub>2</sub>	9.0	7.9	5.9	5.7	5.5	5.3	5.4	

\* per absorption bottle 250 ml, absorption solution KOH 3 mol

\*\* After the CO<sub>2</sub> was absorbed from the biogas, the MilliGascounter displays the volume of the pure methane. The CO<sub>2</sub> absorption capacity limit is reached when the MilliGascounter indicates the values the stated in the table above.

For more details please visit [www.ritter.de](http://www.ritter.de)

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Subject to alterations