

MAKLAD ECO-LYSER:

Innovation in Wastewater-Inactivation

Direct-Steam-System for Continuous Wastewater- Inactivation

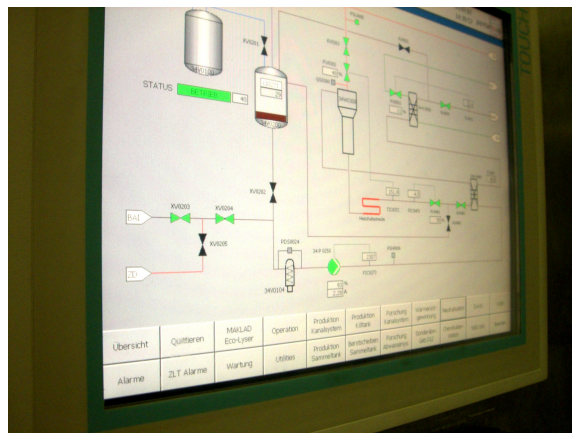


The heart of the system is the innovative MAKLAD INJECTOR. It is responsible for the heating of the wastewater to its inactivation temperature, and for cell disintegration. Additional main components of the System are the heat exchanger for preheating and cooling of the wastewater, the temperature holding tube, the wastewater pump, and the preheating vessel.

How the MAKLAD Eco-Lyser works:

At the beginning of the system cycle, the contents of the pressure tank (about 20litres/5gals) are being pumped through the injector in a circular motion; thereby, being mixed with the steam, until the water-temperature at the end of the temperature holding tube has reached 150°C/302°F. At this point, the System is switched to "Wastewater". The 20°C/68°F wastewater is being heated to 140°C/284°F in the heat exchanger, by adding already inactivated wastewater (150°C/302°F), whereby, at the same time, the already inactivated wastewater is being cooled down from 150°C/302°F to 34°C.

The MAKLAD ECO-LYSER can be operated automatically as well as manually.



Capacity comparison of a Batch system and the MAKLAD ECO-LYSER, when inactivating 3000 litres/hour of wastewater:

3000l/h Wastewater	Batch system	Maklad Eco-Lyser
Heat-up	from 20°C to 130°C = 110°C (68°F to 266°F = 230°F)	from 140°C to 150°C = 10°C (284°F to 302°F = 68°F)
Cooling	from 130°C down to 34°C = 96°C (266°F to 93.2°F = 204.8°F)	no external cooling necessary
Total:	206°C/402.8°F	10°C/68°F
Thermal Energy	618000 kcal = 2587442 kJ = 718.73 kW	30000 kcal = 125604 kJ = 34.89 kW
Usage	100 %	4.85 %
Condens.	660 l/h (100%)	60 l/h (9%)
Space requ.	100m ³ (100%)	20m ³ (20%)

Summary:

The MAKLAD Eco-Lyser introduced above is leading world-wide, in respect to low energy as well as low space-requirements. This System is extremely flexible and very simple to operate.