



**WEBER  
ENTEC**

# **CO2 FOOTPRINT REDUCTION AND PROCESS IMPROVMENT IN OIL BLENDING WITH ULTRASOUND TECHNOLOGY**



# WEBER ENTEC TURNKEY ULTRASOUND MACHINES

- ▶ Founded in 2010
- ▶ Worldwide sales network
- ▶ > 200 installations in 17 countries
- ▶ Market leader at ultrasound disintegration





# WEBER ENTEC APPLICATIONS

> 200 Installations

**Weber Entec GmbH & CO. KG**  
Turn-Key Ultrasound Equipment

In 17 Countries



Biogas plants



WWTPs



Olive Oil  
Production



Pharma  
Industry



Oil-  
Blending



Chemical  
Industry

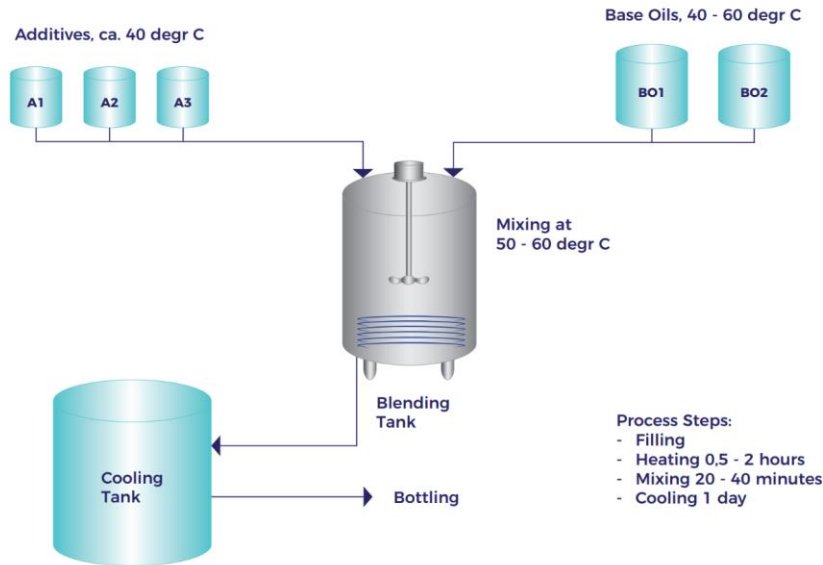


Paper  
Industry

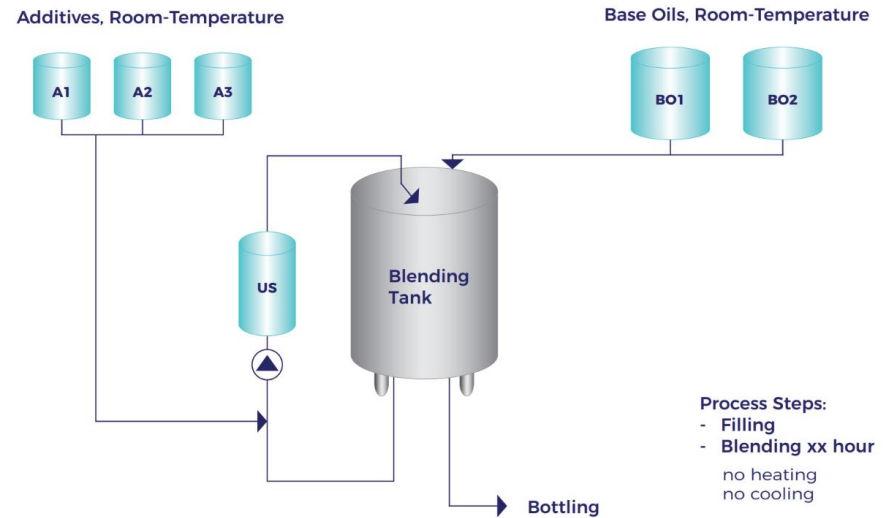


# APPLICATION OF ULTRASOUND CAVITATION REACTOR IN OIL BLENDING

## Traditional Process



## Blending with Ultrasound





# EFFECTS OF THE ULTRASOUND CAVITATION REACTOR

Processing time reduction	
No need for heating	
No need for cooling	
Quality improvements	
Space savings	



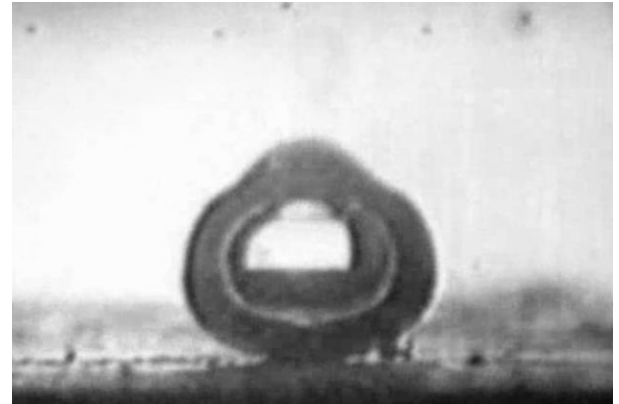
# PHYSICAL PRINCIPLE – CAVITATION

Ultrasound generates cavitation field  
for optimal homogenous blending

## Physical principle: Cavitation

Short term local  $\mu\text{m}$ -radius

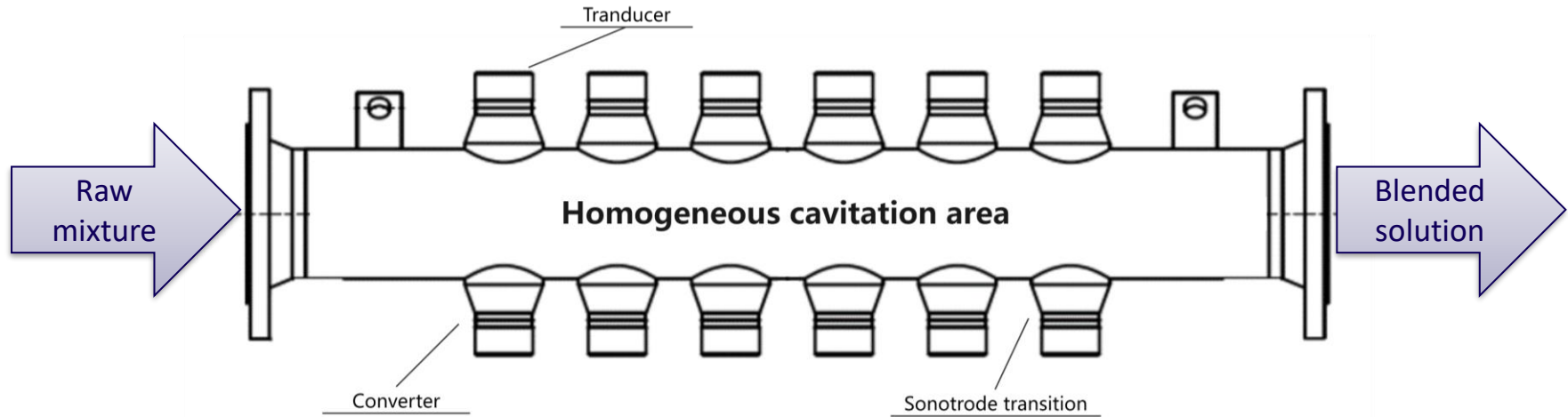
- ▶ Extreme high temperature (up to  $5.000\text{ C}^\circ$ )
- ▶ Extreme high pressure (up to  $1.000\text{ bar}$ )
- ▶ Extreme high acceleration  $\longrightarrow$  Shear forces



Cavitation bubble prior to implosion



# ULTRASOUND REACTOR CAVIPUSH – THE NEXT GENERATION ULTRASOUND



- Clogging free, maintenance free, high durability
- Homogeneous cavitation field
- Precisely defined intensity of treatment

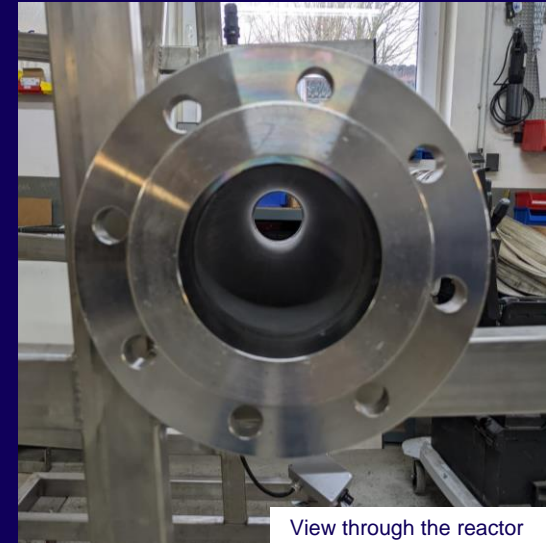


# ULTRASOUND REACTOR CAVIPUSH – THE NEXT GENERATION ULTRASOUND



Exterior view of the reactor

Robust High-End technology  
Optimal energy input through homogeneous treatment



View through the reactor



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# GENERAL MACHINE DESIGN

## 1 Ultrasound unit

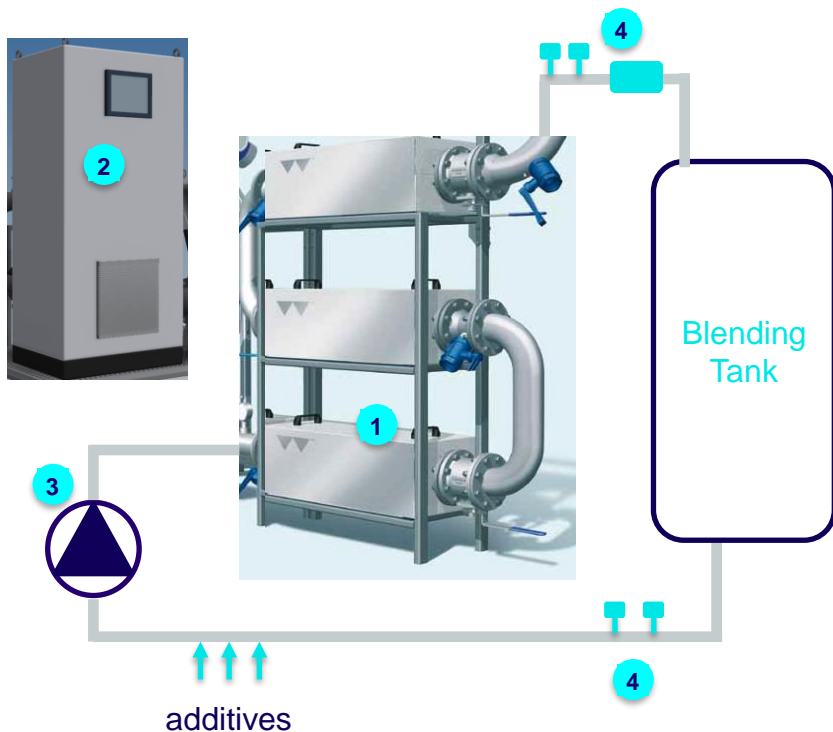
Micro-scale mixing through  
homogenous cavitation field

Adjustable process  
parameters

Consistent and stable high  
quality homogeneous blend

Ultrasonic power  
2 kW per unit

High durability –  
up to 6 years and more



## 2 Control cabinet

Controlbox with ultrasound  
generators and HMI for  
adjustment of process  
parameters

## 3 Circulating pump

Gear pump

## 4 Sensors

2 x pressure gages,  
2 x temperature sensor,  
1 x flow meter



# YOUR BENEFITS

## CO2 Footprint Reduction

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Save/Eradicate all Heating energy

Save/Eradicate all Mixing energy

Lower relative share of building services energy required

## Process Improvements

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Enhanced homogenous stable mixture

Space savings (no cooling tanks)

Bottling directly after blending

Multiply production output within same real estate



# BENEFIT IN YOUR FACILITY

Our **application specialists** support each project individually

- ▶ Exchange project information, challenges, improvement targets, etc.
- ▶ Individual design and benefit evaluation
- ▶ Integration in new project or existing plant
- ▶ Machine Start-Up and Process-Parameter Set-Up together



Contact us for more information!

**THANK YOU**

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