LiqSure

What We Do?

LiqSure makes treatment of industrial effluent faster and cheaper.

How It Works ?

STEP 1

Install a LiqSure HC System

STEP 2

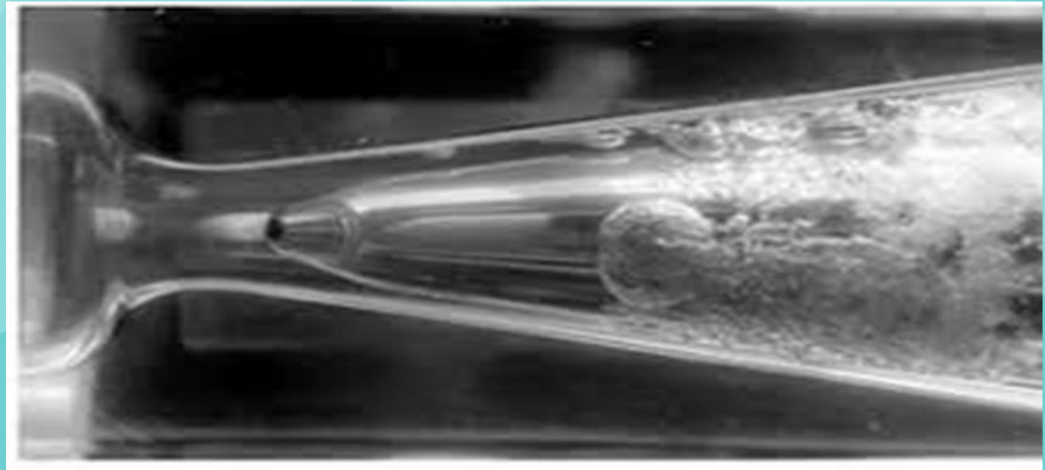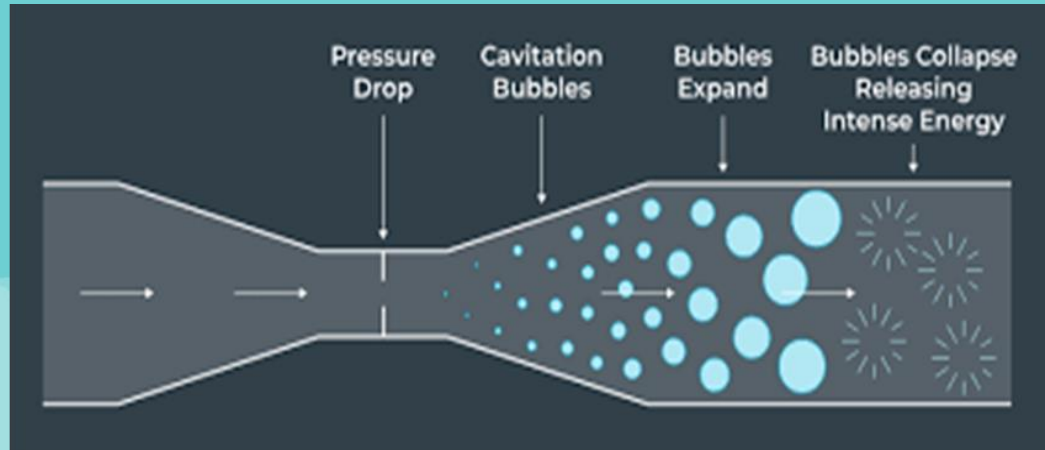Pre-process your effluent in batches

STEP 3

Faster and cheaper biological treatment of effluent

Our Customers

- **Sewage Treatment Plants(STP)**

- **Septage Wastewater Treatment Plants(SWTP/FSTP)**

- **Effluent Treatment plants(ETP)**

- **Zero-Liquid-Discharge Plants(ZLD)**

Unique

Insight

Pressure Drop   Cavitation Bubbles   Bubbles Expand   Bubbles Collapse Releasing Intense Energy

1. $H_2O \rightarrow$ *H + *OH

2. OP + *OH $\rightarrow CO_2 + H_2O$ + DI

- OP= Organic Pollutants

3. DI + *OH $\rightarrow CO_2 + H_2O$

- DI= Degraded Intermediates

(H*, *OH, HO2*, O*)

Some more reactions

2. The intensity of collapse of air, N_2 and O_2 bubbles is more-or-less the same, as indicated by the temperature peaks attained at the collapse of these bubbles. However, the equilibrium composition of the bubble varies due to scavenging of radicals by oxygen and nitrogen molecules present in the bubble.
3. For air bubble, the N_2 scavenges the $H^{\cdot}$, $O^{\cdot}$ and $^{\cdot}OH$ radical to produce various species such as NO, N_2O, NO_2, HNO and HNO_2 through the following reactions [45]:

$$N_2 + O^{\cdot} \rightleftharpoons N^{\cdot} + NO \qquad (R.1)$$

$$N_2 + ^{\cdot}OH \rightleftharpoons N_2H + O^{\cdot} \qquad (R.2)$$

$$N_2 + ^{\cdot}OH \rightleftharpoons N_2O + H^{\cdot} \qquad (R.3)$$

$$N_2 + ^{\cdot}OH \rightleftharpoons NH + NO \qquad (R.4)$$

$$N_2 + H^{\cdot} \rightleftharpoons N_2H \qquad (R.5)$$

$$N_2 + H^{\cdot} \rightleftharpoons NH + N^{\cdot} \qquad (R.6)$$

$$N + ^{\cdot}OH \rightleftharpoons NO + H^{\cdot} \qquad (R.7)$$

$$N_2O + O^{\cdot} \rightleftharpoons 2NO \qquad (R.8)$$

$$NO + OH^{\cdot} \rightleftharpoons NO_2 \qquad (R.9)$$

$$NH + ^{\cdot}OH \rightleftharpoons NH_2 + O^{\cdot} \qquad (R.10)$$

$$NH_2 + O^{\cdot} \rightleftharpoons H^{\cdot} + HNO \qquad (R.11)$$

$$HNO + O^{\cdot} \rightleftharpoons NH + O_2 \qquad (R.12)$$

$$HNO + O^{\cdot} \rightleftharpoons NO + ^{\cdot}OH \qquad (R.13)$$

$$HNO + ^{\cdot}OH \rightleftharpoons NO + H_2O \qquad (R.14)$$

However, O_2 reacts with these species to regenerate $O^{\cdot}$ and $^{\cdot}OH$ radicals through the following reactions:

$$N + O_2 \rightleftharpoons NO + O^{\cdot} \qquad (R.15)$$

$$NO + O_2 \rightleftharpoons NO_2 + O^{\cdot} \qquad (R.16)$$

$$NH + O_2 \rightleftharpoons HNO + O^{\cdot} \qquad (R.17)$$

$$NH + O_2 \rightleftharpoons NO + ^{\cdot}OH \qquad (R.18)$$

$$N_2 + O_2 \rightleftharpoons N_2O + O^{\cdot} \qquad (R.19)$$

$O^{\cdot}$ radicals also react with $H^{\cdot}$ and $^{\cdot}OH$ radicals to produce $HO_2^{\cdot}$ radical as follows:

$$H^{\cdot} + O_2 \rightleftharpoons HO_2^{\cdot} \qquad (R.20)$$

$$^{\cdot}OH + O_2 \rightleftharpoons HO_2^{\cdot} + O^{\cdot} \qquad (R.21)$$

4. For O_2 bubbles, the yield of H_2O_2 and O_3 is much higher than other bubbles due to extensive scavenging of $O^{\cdot}$, $H^{\cdot}$ and $^{\cdot}OH$ radicals by the O_2 molecules through the reactions:

Type of Industrial Effluent	%COD removal
Pharmaceutical	~60%
Textile	>70
Distillery	>75
Personal & Homecare	>85
Ice-Cream	>85
Industrial Leachate	>40
Sewage Wastewater	>90
Septage Wastewater	>85
CETP	~40% COD >50% Ammoniacal N_2
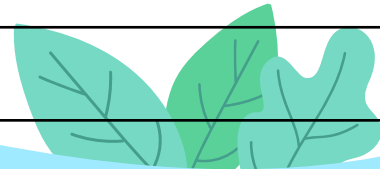
TREATED WITH LIQSURE
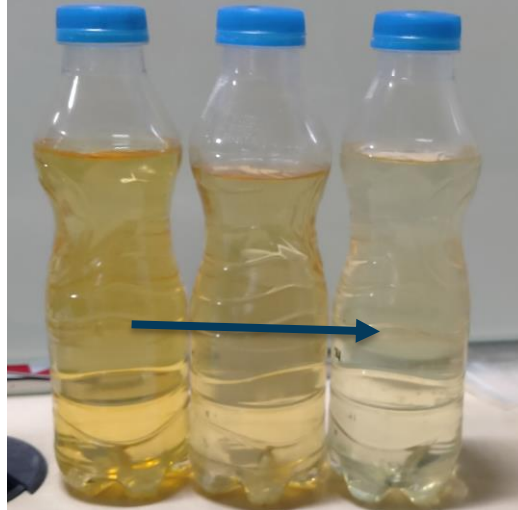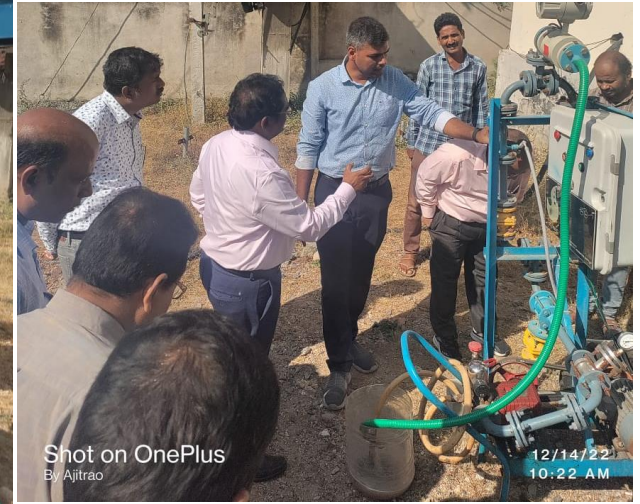
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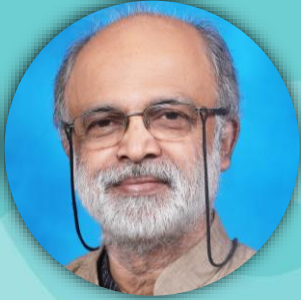
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इंडियनऑयल

IndianOil

एन एम डी सी

NMDC

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IIT HYDERABAD
TECHNOLOGY INCUBATION CENTER

LiqSure brings to You

Low Footprint

Zero Sludge

40%+ reduction in Opex

NO filters or Membranes

Low Maintenance

Retrofitted

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100 KLD Commercial Plant