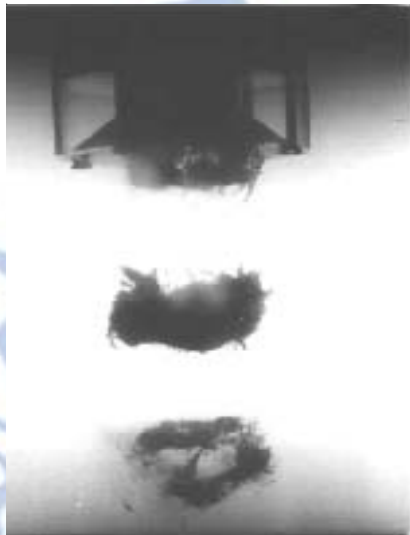


ADVANTAGES

- High Energy Efficiency
- No use of hazardous chemicals
- Operation at modest pressures
- No special handling required
- No toxic byproducts
- Readily scaled to a wide variety of capacities
- Proven technology enabling robust low maintenance systems
- Applicable to a wide variety of compounds



STRATOJET®

HISTORICAL BACKGROUND

The **DYNAJETS®** Advanced Oxidation technology has its foundation in earlier DYNAFLOW patented cavitating and resonating jet technologies that produce highly erosive water for cutting, drilling, and cleaning. The **DYNAJETS®** patented oxidation technology is based on research sponsored in part by DYNAFLOW, the *National Science Foundation*, *NASA*, and *EPA*.

DYNAFLOW Products Include:

Computational Fluid Dynamics
2DYNAFS®, 3DYNAFS®, 2DFLOW®

Naval Hydrodynamics
DYNASIM®

Cavitating, Structured Jet Nozzles & Systems
DYNAJETS® Oxidation, Disinfection Systems
DYNAJETS® Waterjets for Cutting, Cleaning, Drilling

ABS Acoustic Bubble Spectrometer®

Filtration Systems
DYNAPERM®

DYNAFLOW Capabilities Include:

Cavitation
Multiphase Flow
Acoustics
Flow Visualization
Underwater Explosions
Computational Fluid Dynamics
Software Development
Water Jet Technology
Computed Tomography
Inverse Methods
Fluid Structure Interaction
Naval Hydrodynamics
Ship Maneuvering Simulation
Liquid & Air Filtration
Oxidation, Remediation & Disinfection
Material Erosion

DYNAFLOW, INC.

10621-J Iron Bridge Road

Jessup, MD 20794

TEL: (301) 604-3688

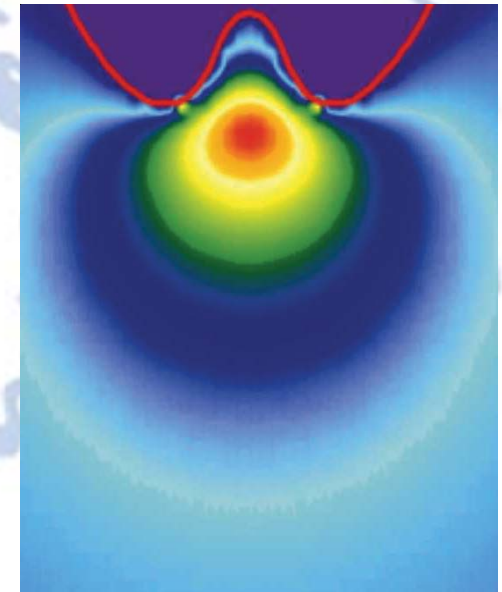
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DYNAJETS®

**ADVANCED OXIDATION
BY
HYDRODYNAMIC CAVITATION**



MECHANISM

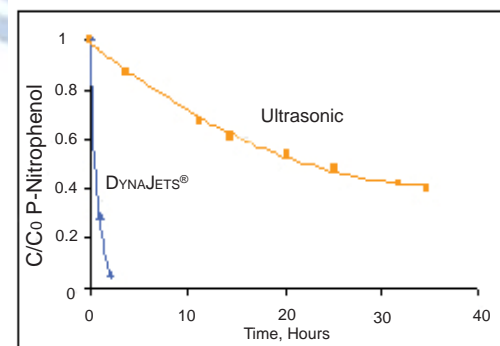
Cavitation bubble collapse in a liquid can generate *extremely high local pressures and temperatures*. Water dissociates to form hydroxyl radicals, which are very strong oxidizing agents. These radicals undergo oxidation reactions reducing many undesirable compounds, ultimately producing simple nontoxic substances. Pyrolysis and supercritical water formation have also been shown to occur. This phenomenon is employed in the field of sonochemistry to accelerate a variety of chemical reactions. It is also tied to sonoluminescence – the emission of light during bubble collapse.



Research is currently being conducted on the development of a **DYNAJETS®** water reclamation system for NASA space application, and for water purification for EPA.

DYNAJETS® Oxidation technology employs hydrodynamic cavitation by the use of specially designed *submerged cavitating liquid jets* to trigger widespread cavitation, and induce bubbles to grow and collapse.

DYNAJETS® have been found to achieve oxidation with energy efficiencies up to two orders of magnitude larger than those obtained with ultrasonic means.



DYNAJETS®
ADVANCED OXIDATION
BY
HYDRODYNAMIC CAVITATION



DYNASWIRL®

APPLICATIONS

The **DYNAJETS®** oxidation technology is capable of oxidizing a variety of substances including the following and combinations of:

- p*-Nitrophenol (PNP)
- Acetone
- Bioreactor effluent
- 1,1,1-Trichloroethane
- Trichloroethylene
- 1,1-Dichloroethylene
- 1,2-Dichloroethylene
- Tetrachloroethylene
- Methyl Orange
- Isopropyl Alcohol
- Simulated hygiene waste
- Arsenic
- 2,4 -D
- Malathion
- Chlorhexidine
- Alachlor
- Carbaryl
- Algea



SERVOJET®