# CaviTune Super Mixer
# Low Pressure Nano Reactor (LPN)

VARIABLE FLOW-THROUGH CAVITATION DEVICE
Patent Pending - Serial No. 15/375,809

CAVITATION OPTIMIZATION IS DIRECTLY TIED TO ITS INTENDED USE.

LPN multistage cavitator is to be designed to achieve improved performance over conventional technologies covering a wide range of applications while processing large volumes of fluids.
The improved performance of a low pressure multistage cavitation system is going to be achieved through the introduction of an innovative  conceptual designs and usage of advanced computational techniques. LPN systems will depict design methods that combine the best analytical design tools combined with actual computerized test data, resulting in a cost effective flow through cavitation systems with state-of-the-art performance, reliability and high cavitation efficiency.
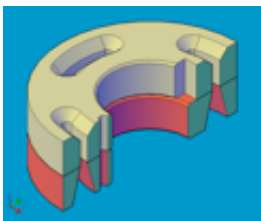


The Cavitune design solutions offered by Cti combine geometric modeling, fluid flow prediction, structural analysis, and data analysis.

Pressure
Contour 1 [Pa]
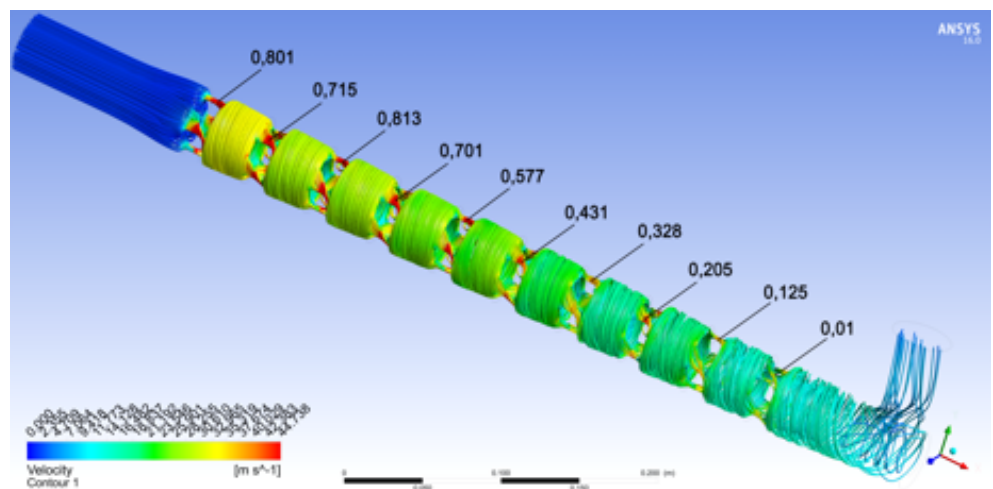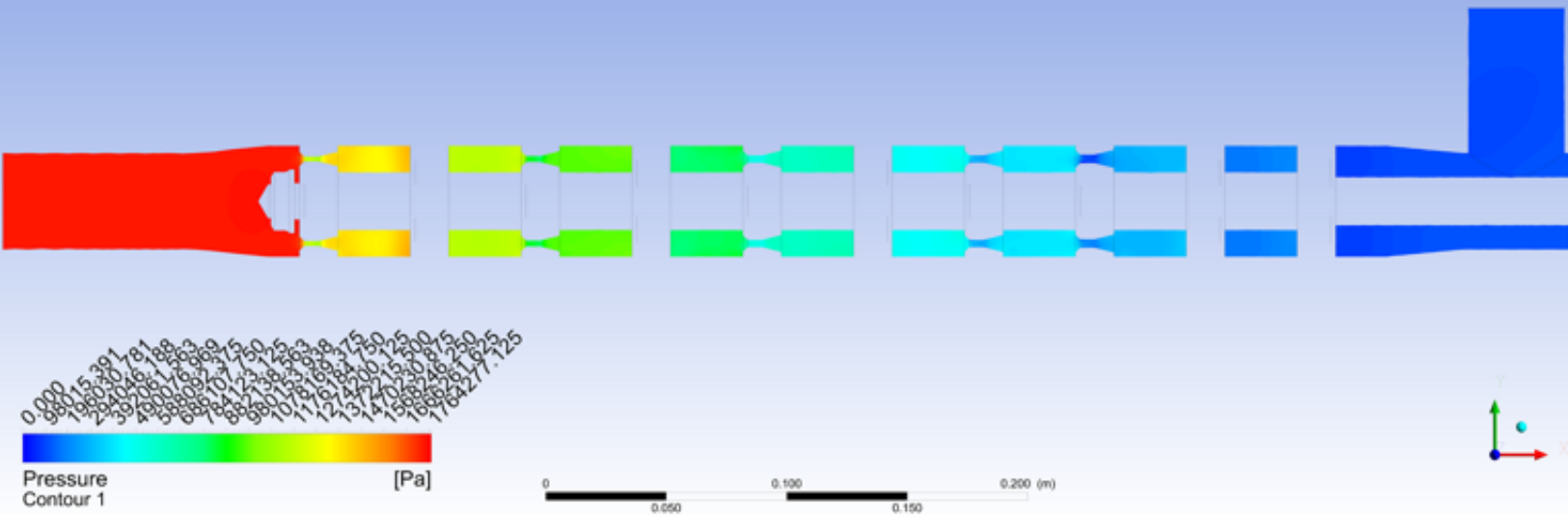
CTi engineers use innovative methodologies and techniques to develop newly designed LPN systems that incorporate prototype design, fabrication and testing, interactive 3D modeling, velocity simulation, cavitation calculations amplifying high efficiency of hydrodynamic flow through multistage low pressure cavitator system (LPN). Further, this approach allows our engineers and designers to implement a flow simulation and visualization to identify areas of the most optimized cavitation numbers. Conversely, it would be very difficult to obtain similar efficiency from employing just the experimental methods.

Our development process allows Cti to improve designs in the shortest amount of time and lowest development cost.



Velocity
Vector 1 [m s^-1]
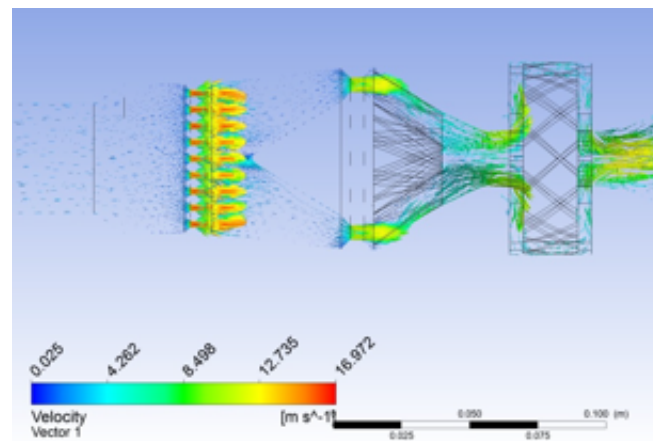
Interactive design tools like ANSYS guide the user through the optimization design processes.

## Single-stage, Multistage and Mixed-flow Cavitaion Design

Analytically driven design methodology, combined with years of experience in cavitator engineering and technology, allows CTi engineers and designers to comprehensively understand the variety and prerequisites for each specific application. Our cavitator design solution is built around a solid core of design procedures that effectively address many attributes, including:
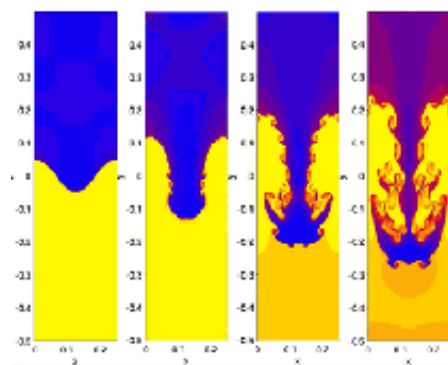


Cavitation Bubble Explodes

- Best-in-class cavitation efficiency

- Reliability — robust mechanical design without any moving parts

- Cavitation performance tailoring

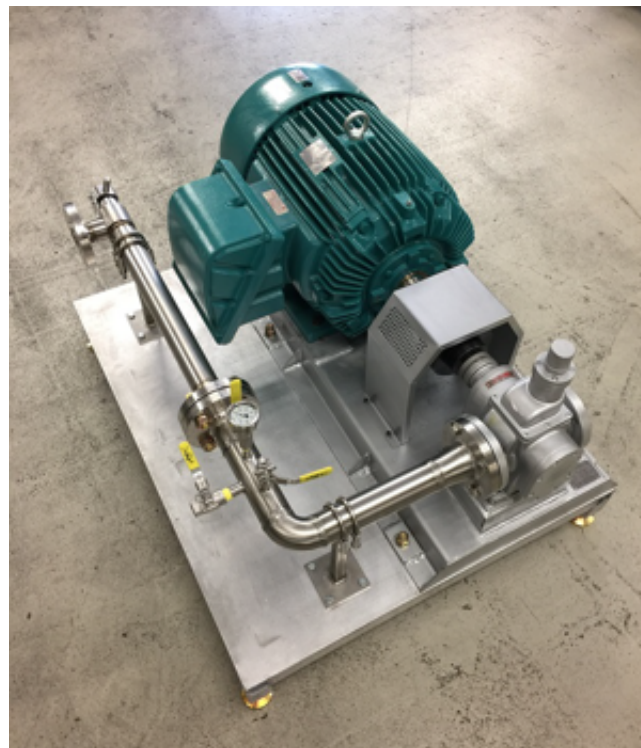- Optimum matching cavitation characteristics

# *Concepts* LPN
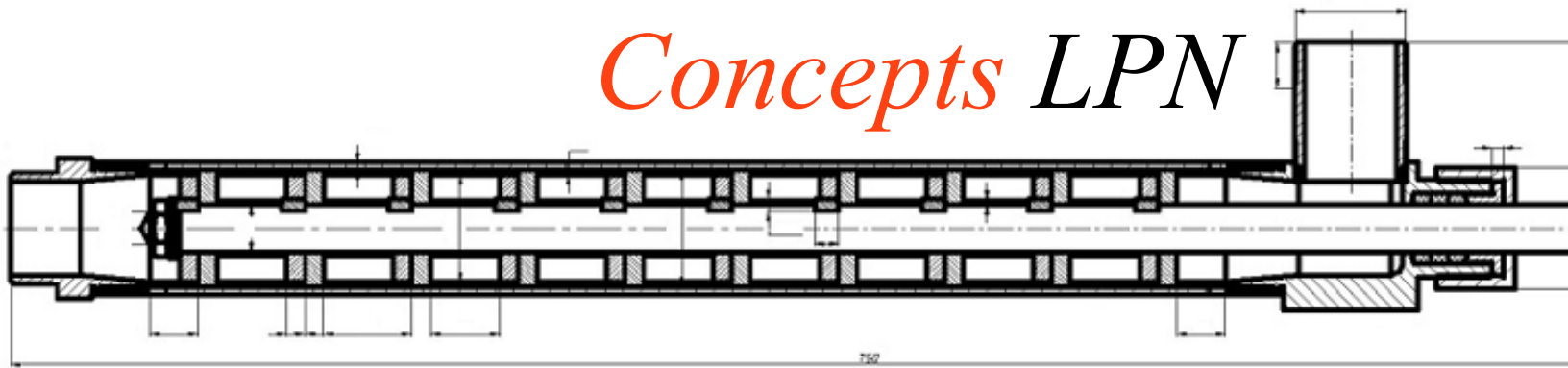
CTi's cavitators design method combines our robust suite of tools used for sizing and volute geometry development, with the ability to import years of legacy design, operational and test data. Automatically tying the design simulation with actual data provides our designers with the ability to see geometric problems or parameters that fall outside of the standard recommended values, thus can be swiftly evaluated for parameters such as cavitation efficiency, outlet and inlet pressure, high and low pressure zones.

CTi's cavitator engineers can deliver robust solutions in a short period of the time by making use of CFD, FEA and ANSYS data analysis tools. Integration of our analytical design tools with proprietary software provides quick evaluation of the manufacturability of the designs, facilitating the manufacturing process before a single chip is cut, saving time and reducing production costs.

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