



EXPANDER TECHNOLOGY

The Toroidal Intersecting Vane Machine, or TIVM, is a positive displacement expander that also offers the flow and power density features of a turbine. Click here to learn about the [TIVM's Design Features](#).



TIVM™

to-roi-dal: shaped like a torus or toroid: doughnut-shaped.

HOW DOES THE TECHNOLOGY WORK?

Click To See Animation

INTERSECTING VANES



The TIVM contains rotating rings of vanes whose intersections dynamically create chambers.

PRIMARY VANES



The chambers formed between the primary and secondary vanes enlarge or shrink, thus expanding and then discharging the working fluid. (for example: air, steam, gas, etc.).

VALVELESS DESIGN



The TIVM has no valves. Gas flow is controlled by the timing of the primary vanes passing inlet and discharge ports.

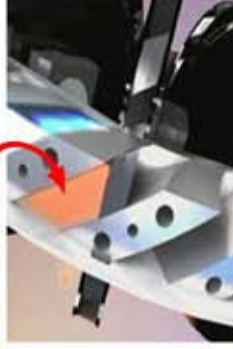
EXPANSION SEQUENCE

INLET



High pressure gas enters the chamber through an inlet port.

EXPANSION



Pressure in the chambers cause the primary vanes to rotate.

MECHANICAL POWER DELIVERY

rotation



The rotating primary ring delivers mechanical power to the integrated drive shaft.