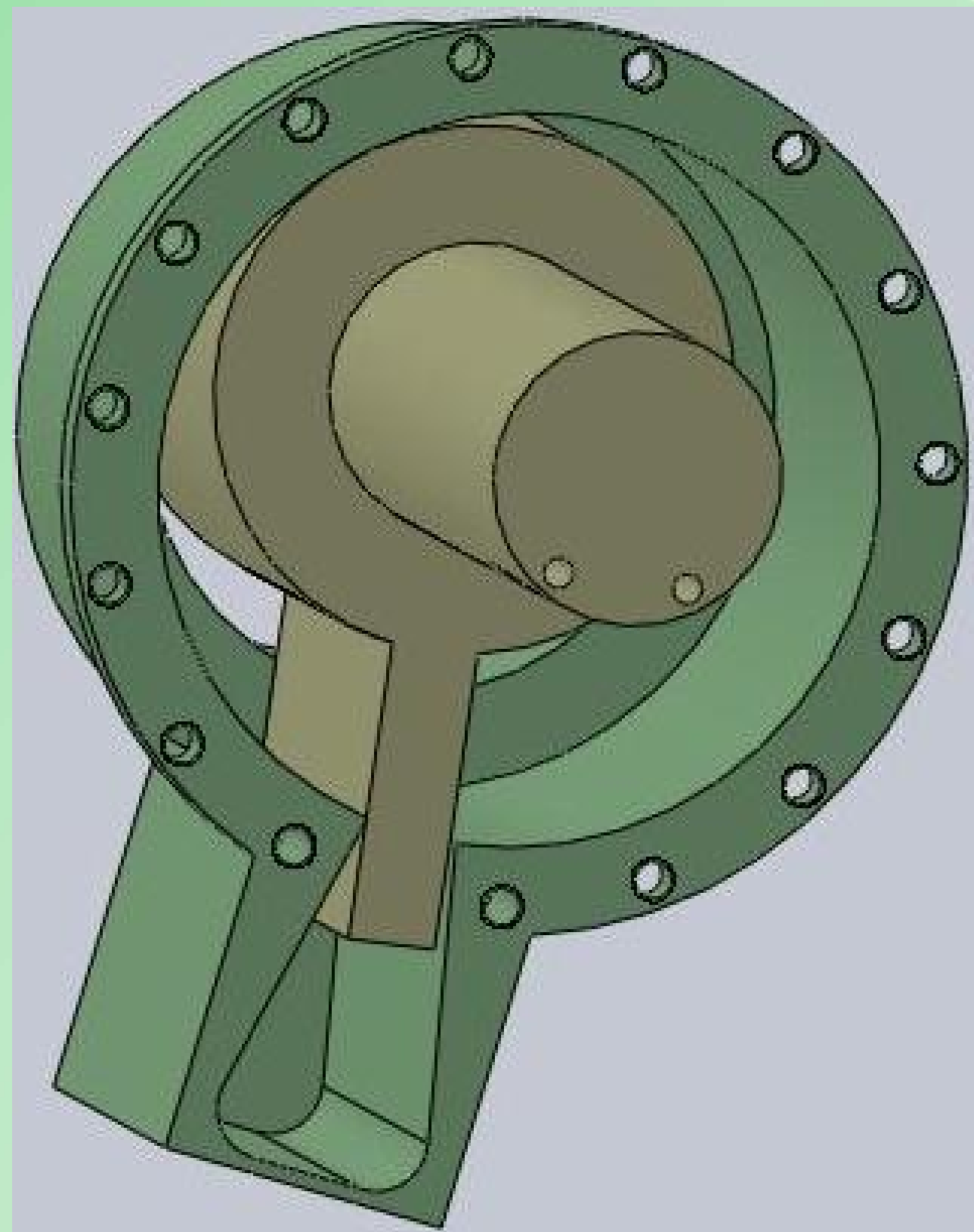


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Leakage Modeling of Revolving Vane Expander



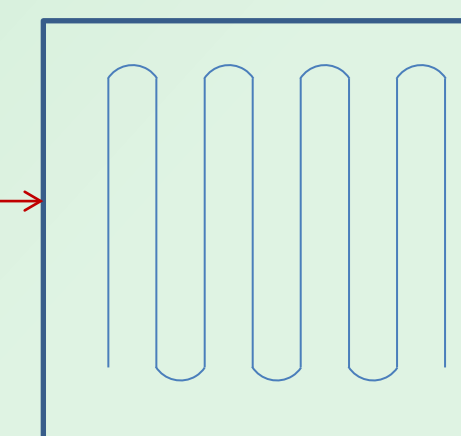
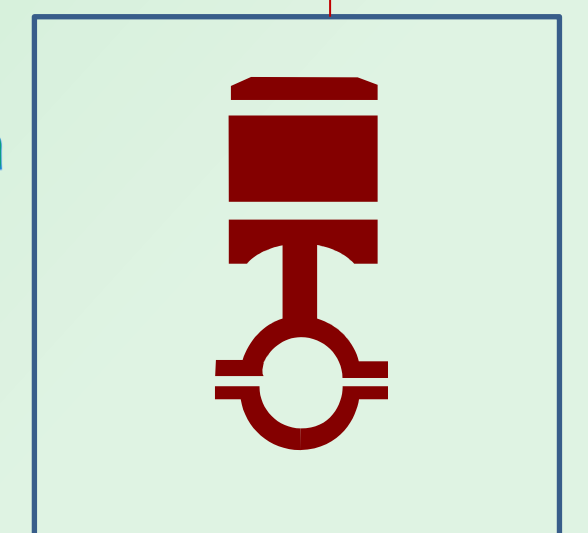
RV-i Expander



Condenser



Compressor



Evaporator

Facts

- Patented RVi mechanism 2008
- RVi expander patent submitted in 2009
- Increase in COP of up to **60%**

Why Expander?

- To convert isenthalpic expansion into isentropic expansion
- To Extract energy from expansion of the fluid
- Energy extracted could then be used to drive compressor

Benefits Of RVi Expander

- Reduced frictions
- Ease of machining
- Few structural components
- Good noise and vibration level

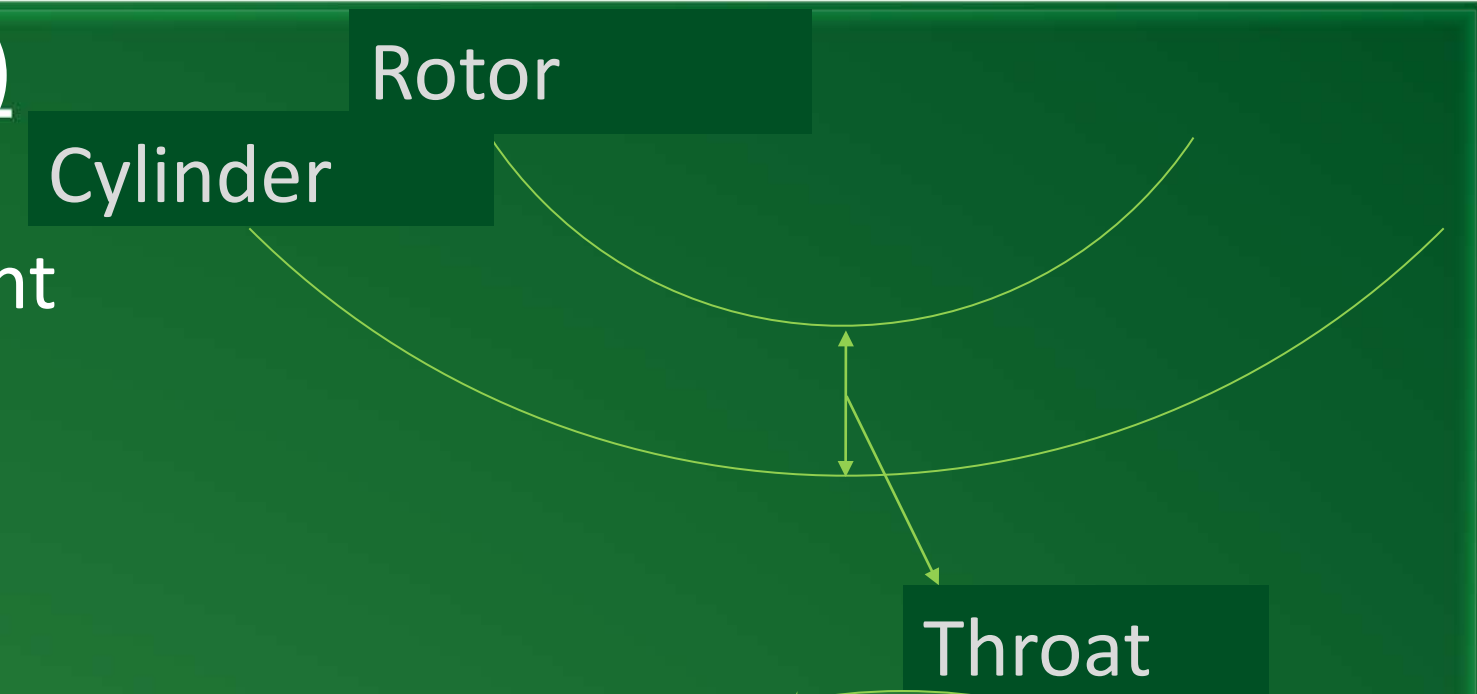
Leakage

- Radial Leakage
- Endface Leakage

- Pressure Difference
- Cylinder Rotation
- Rotor Rotation
- Shaft and its Rotation

Radial Leakage(2D)

- Choked flow
- Convergent-Divergent Nozzle
- Poiseuille + Couette Flow Profile



Endface Leakage(3D)

- Source and Sink
- Rotational Shearing by cylinder and rotor(eccentric)
- Minimum energy path taken by the flow
- Rotor shaft (Doublet)
- Radial shearing effect by due to rotor shaft rotation (Doublet + Free Vortex)

