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High Efficiency Variable Displacement Pump (20130033)

IP Status: Issued US Patent; **Application #:** 14/012,677

High Efficiency Variable Displacement Pump

The high efficiency hydraulic transformer operates at high efficiency across the full displacement range. Conventional variable displacement pumps suffer from low efficiency when operated at partial loads and low displacements, but the described architecture overcomes these problems. Potential applications for the system include hydraulic hybrid vehicles, hydrostatic transmission for wind power and compressed air energy storage.

Reduced Energy Loss from Friction and Lubrication Leakage

The described invention includes an adjustable linkage for use in a variable displacement reciprocating piston pump. The variable displacement six-bar crank-rocker-slider mechanism, which goes to zero displacement with constant top dead center position, reduces energy loss caused by friction and lubrication leakage providing high efficiency across all operating conditions.

BENEFITS OF HIGH EFFICIENCY VARIABLE DISPLACEMENT PUMP:

- Reduced energy loss caused by friction and lubrication leakage.
- True zero displacement, constant top dead center position and low dead volume.
- The technology can improve the efficiency of compressed air energy storage systems, which work alongside renewable energy generators.

Researchers

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Dr Van de Ven's research focuses on advancing energy conversion and storage with compact and efficient solutions.
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Dr. Van de Ven's research
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Licensing Terms

Technology ID
20130033

Category
Engineering & Physical Sciences/Sustainable Technology

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