

Panitpol Patcharoros 2010: Improvement of Volumetric Efficiency of a Scroll Pump.
Master of Engineering (Mechanical Engineering), Major Field: Mechanical
Engineering, Department of Mechanical Engineering. Thesis Advisor:
Assistant Professor Phichai Kritmaitree, Ph.D. 96 pages.

The research presents design and improvement to increase a volumetric efficiency of a scroll pump. The coordinates of scroll wraps were calculated by MATLAB program when scroll coefficient (α) is 1.5 mm and discrepancy of starting roll angle (β) is 0.3π radian. The scroll pump was modeled by SolidWorks program and constructed by CNC machine. The testing facilities were design and constructed under the Japanese Industrial Standards (JIS B 8301) and used 500 watts AC motor for testing speed at 200 to 700 rpm.

The results showed that the pressure, electric power and total efficiency of scroll pump were inverted with the flow rate. The maximum value of the flow rate, pressure, electric power and total efficiency were 20 L/min, 12.30 psig, 106.08 watts and 19.1%, respectively. The improved average value of volumetric efficiency of a scroll pump was 89.56 %

Student's signature

Thesis Advisor's signature