

**Indiana University – Purdue University Fort Wayne**  
**Opus: Research & Creativity at IPFW**

---

Manufacturing & Construction Engineering  
Technology and Interior Design Senior Design  
Projects

School of Engineering, Technology and Computer  
Science Design Projects

---

4-30-1971

# Design and Study of a Reversed Sliding Vane Rotary Pump to Produce a Rotary Output from a Constant Pressure Water Input

James E. Bugert

*Indiana University - Purdue University Fort Wayne*

Follow this and additional works at: [http://opus.ipfw.edu/etcs\\_seniorproj\\_mctid](http://opus.ipfw.edu/etcs_seniorproj_mctid)

---

## Opus Citation

James E. Bugert (1971). Design and Study of a Reversed Sliding Vane Rotary Pump to Produce a Rotary Output from a Constant Pressure Water Input.

[http://opus.ipfw.edu/etcs\\_seniorproj\\_mctid/197](http://opus.ipfw.edu/etcs_seniorproj_mctid/197)

This Senior Design Project is brought to you for free and open access by the School of Engineering, Technology and Computer Science Design Projects at Opus: Research & Creativity at IPFW. It has been accepted for inclusion in Manufacturing & Construction Engineering Technology and Interior Design Senior Design Projects by an authorized administrator of Opus: Research & Creativity at IPFW. For more information, please contact [admin@lib.ipfw.edu](mailto:admin@lib.ipfw.edu).

Design and Study  
of a  
Reversed Sliding Vane Rotary Pump  
to  
Produce a Rotary Output  
from a  
Constant Pressure Water Input

Submitted to  
Mr. Jack C. Quinn  
Assistant Professor of  
Mechanical Engineering Technology  
Purdue University  
Fort Wayne, Indiana

by  
James E. Bugert  
Mechanical Engineering Technology Student  
Purdue University  
Fort Wayne, Indiana  
April 30, 1971

## Table of Contents

Title Page	
Letter of Transmittal	ii
Table of Contents	iii
List of Illustrations	iv
Summary	
Purpose	
Scope	
Statement of Problem	
Related Literature	2
Discussion	2
State of the Art	2
Operating Principle	2
Investigation	3
Brush to Surface Friction	3
Torque Requirements	4
Initial Design Assumptions	4
Shaft Speed	6
Material Selection for Prototype	6
Strength Calculations for Rotor	8
Strength Calculations for Shaft and Keyway	9
Volume of Polyester Plastic	10
Volume of Plexiglass	10
Cost of Prototype	11
Test	11
Proceedure	11
Observations	12

## Table of Contents (cont.)

Conclusions and Recommendations	13
Conclusions	13
Recommendations	14
Appendix A	16
Appendix B	17
Assembly Drawing	
Bulletin 600	
Bulletin 650	

## List of Illustrations

Figure 1	5
Figure 2	8
Figure 3	8
Figure 4	10