

# SELECTED TOPICS In Aerospace Engineering

EDITOR

ERWIN SULAEMAN



IIUM Press

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

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Published by:  
IIUM Press  
International Islamic University Malaysia

First Edition, 2011  
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Perpustakaan Negara Malaysia

Cataloguing-in-Publication Data

ISBN: 978-967-418-145-1

Member of Majlis Penerbitan Ilmiah Malaysia – MAPIM  
(Malaysian Scholarly Publishing Council)

Printed by :  
**IIUM PRINTING SDN.BHD.**  
No. 1, Jalan Industri Batu Caves 1/3  
Taman Perindustrian Batu Caves  
Batu Caves Centre Point  
68100 Batu Caves  
Selangor Darul Ehsan  
Tel: **+603-6188 1542 / 44 / 45** Fax: **+603-6188 1543**  
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## ***INTRODUCTION TO COMPRESSORS***

### **1.1 Introduction**

**T**urbomachines are widely used for industrial and aerospace applications. Many of these applications include compression of air for use in industrial gas turbines and aircraft gas turbine engines in order to produce mechanical power. Other applications are transportation of natural gas in the petroleum industry and pressurization of gas in process and chemical industries.

### **1.2 Types of Compressors**

There are two basic types of compressors including positive displacement compressors and dynamic compressors.

#### **1.2.1 Positive Displacement Compressors**

The theory of operation is by entrapping a volume of fluid and then reducing that volume. It includes two types; reciprocating and rotary. Bicycle pump is one example for reciprocating positive displacement compressors. Generally, it has constant flow and variable pressure ratio for a given speed. Positive displacement compressors include:

- piston compressor
- screw compressor
- vane compressor
- lobe compressor

#### **1.2.2 Dynamic Compressors**

In dynamic compressors, the flow is continuous. There are no valves and there is no "containment" of the gas, as in a positive displacement compressor. Theory of