Books: (c2010-2013)

Petela, Ryszard. Engineering thermodynamics of thermal radiation for solar power utilization. McGraw Hill, c2010. TK 1056 P48 2010

Probability and statistics for engineers and scientists. Pearson Education, c2011. TA 340 W35 2011

Probability and statistics for engineers and scientists. Prentice-Hall, c2012. TA 340 W35 2012

Rajput, R. K. Engineering thermodynamics. Jones and Bartlett Publishers, c2010. TJ 265 R35 2010

Raju, K. S. N. Fluid mechanics, heat transfer, and mass transfer : chemical engineering practice. Wiley, c2011. TP 155 R35 2011

Rathore, Mahesh M. Thermal engineering. Tata McGraw-Hill Education, c2010. TJ 260 R38 2010

Sandler, Stanley I. An introduction to applied statistical thermodynamics. Wiley, c2011. TP 155.2 T45 S26 2011

Surface engineering. Daya publishing, c2010. TA 418.7 S87 2010

e-Books (c2006-2013)

Advances in industrial heat transfer. CRC Press, 2013.

Baskharone, Erian A. Thermal science essentials of thermodynamics, fluid mechanics, and heat transfer. McGraw -Hill, c2012.

Khabensky, Vladimir B. Coolant flow instabilities in power equipment. CRC Press, 2013.

Nanoparticle heat transfer and fluid flow. CRC Press, 2013.

Petela, Ryszard. Engineering thermodynamics of thermal radiation for solar power utilization. McGraw Hill, c2010.

Potter, Merle C. Schaum's outline of thermodynamics for engineers. McGraw-Hill, 2006

Online Subscriptions:

Science Direct—the world's largest electronic collection of science, technology and medicine full text and bibliographic information.

Springerlink – one of the world's leading interactive databases for high-quality STM journals, book series, books, reference works and the Online Archives Collection. SpringerLink is a powerful central access point for researchers and scientists

Taylor and Francis—offers a wealth of information from hundreds of electronic journals, books, ebooks and reference works in all areas of humanities, social sciences, science and technology

Wiley—provides access to online journals, books, and other resources from John Wiley & Sons, including content from the key imprints Wiley-Blackwell, Wiley-VCH, Jossey-Bass, and from hundreds of scholarly and professional societies.

Disclaimer:

This pathfinder contains suggested materials on Machines that are available at the College of Engineering Library I. However, some references were not included.

We welcome suggestions for new pathfinder topics.

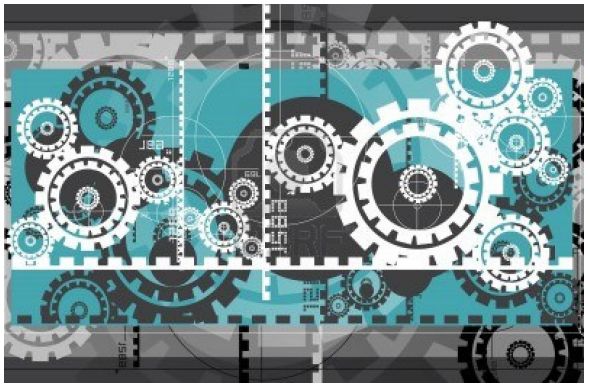
University of the Philippines Diliman
COLLEGE OF ENGINEERING
LIBRARY I

1/F Melchor Hall
S. Osmena Avenue,
UP Diliman, Quezon City 1101

Phone: (632) 981-8500 local 3143 to 3144
Fax: (632) 920-9060
Email: library@engglib.upd.edu.ph
Website: http://www.engglib.upd.edu.ph

UP Engineering Library

University of the Philippines Diliman
COLLEGE OF ENGINEERING
LIBRARY I



Source:
http://us.123rf.com/400wm/400/400/welcomia/welcomia1109/welcomia110900379/10654820-modern-marvels-hi-tech-illustration--background-abstract-havy-duty-

MACHINES

PATHFINDER

THERMODYNAMICS

Thermodynamics is a branch of natural science concerned with heat and its relation to energy and work. It defines macroscopic variables (such as temperature, internal energy, entropy, and pressure) that characterize materials and radiation, and explains how they are related and by what laws they change with time. Thermodynamics describes the average behavior of very large numbers of microscopic constituents, and its laws can be derived from statistical mechanics.

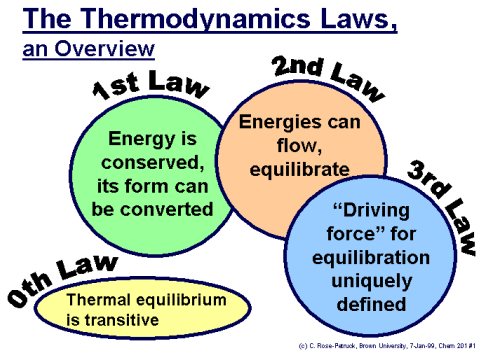
Thermodynamics applies to a wide variety of topics in science and engineering—such as engines, phase transitions, chemical reactions, transport phenomena, and even black holes. Results of thermodynamic calculations are essential for other fields of physics and for chemistry, chemical engineering, aerospace engineering, mechanical engineering, cell biology, biomedical engineering, and materials science—and useful in other fields such as economics.

Much of the empirical content of thermodynamics is contained in the four laws. The first law asserts the existence of a quantity called the internal energy of a system, which is distinguishable from the kinetic energy of bulk movement of the system and from its potential energy with respect to its surroundings. The first law distinguishes transfers of energy between closed systems as heat and as work. The second law concerns two quantities called temperature and entropy. Entropy expresses the limitations, arising from what is known as irreversibility, on the amount of thermodynamic work that can be delivered to an external system by a thermodynamic process. Temperature, whose properties are also partially described by the zeroth law of thermodynamics, quantifies the direction of energy flow as heat between two systems in thermal contact and quantifies the common-sense notions of "hot" and "cold".

HISTORY

The history of thermodynamics as a scientific discipline generally begins with Otto von Guericke who, in 1650, built and designed the world's first vacuum pump and demonstrated a vacuum using his Magdeburg hemispheres. Guericke was driven to make a vacuum in order to disprove Aristotle's long-held supposition that 'nature abhors a vacuum'. Shortly after Guericke, the physicist and chemist Robert Boyle had learned of Guericke's designs and, in 1656, in coordination with scientist Robert Hooke, built an air pump. Using this pump, Boyle and Hooke noticed a correlation between pressure, temperature, and volume. In time, Boyle's Law was formulated, stating that for a gas at constant temperature, its pressure and volume are inversely proportional. In 1679, based on these concepts, an associate of Boyle's named Denis Papin built a steam digester, which was a closed vessel with a tightly fitting lid that confined steam until a high pressure was generated.

Source: http://en.wikipedia.org/wiki/Thermodynamics



The Thermodynamics Laws

Image URL:
http://casey.brown.edu/research/crp/Edu/Documents/00_Chem201/images/The_Thermodynamics_Laws__an_Ov.gif

Books: (c2010-2013)

Annamalai, Kalyan. Advanced thermodynamics engineering. CRC Press, c2011. TJ 265 A65 2011

Ballinger, Jack T. Chemical technicians' ready reference handbook. McGraw-Hill, c2011. QD 61 B35 2011

Balmer, Robert T. Modern engineering thermodynamics. Elsevier/Academic Press, c2011. TJ 265 B35 2011

Cengel, Yunus A. Fundamentals of thermal-fluid sciences. McGraw-Hill, c2012. TJ 265 C42 2012

Cengel, Yunus A. Thermodynamics : an engineering approach. McGraw-Hill Higher Education, c2011. TJ 265 C46 2011

Chemical thermodynamics : for process simulation. Wiley, c2012. TJ 265 C44 2012

Dalarsson, Nils. Introductory statistical thermodynamics. Academic Press, c2011. QC 311.5 D35 2011

Engel, Thomas. Thermodynamics, statistical thermodynamics, & kinetics. Prentice-Hall, c2010. QC 311.5 E54 2010

Engel, Thomas. Physical chemistry. Pearson, c2013. QD 453.3 E54 2013

Houlsby, G. T. Principles of hyperplasticity : an approach to plasticity theory based on thermodynamic principles. Springer, c2010. QC 191 H68 2010

Jose, Wilfredo I. Introductory concepts in chemical engineering. University of the Philippines, 2011. TP 155 J67 2011

Kadane, Joseph B. Principles of uncertainty. CRC Press, c2011. QA 279.5 K33 2011

Moran, Michael J. Fundamentals of engineering thermodynamics. Wiley, c2010. TJ 265 M67 2010

Non-equilibrium thermodynamics for engineers. World Scientific, c2010. QC 318 I7 N66 2010