Basic Motor Theory, Operation, and Application
Course Outline

I. Fundamental Concepts and Terminology

A. Basic Electricity
B. Mechanical Physics
C. Magnetism
D. Electromagnetic Torque

II. Motor Construction

A. Components
B. Insulation
C. Bearings

III. Basic Motor Theory

IV. Direct Current (DC) Motors

A. Permanent Magnet DC (PMDC)
B. Commutation
C. Moving Coil Hollow Rotor
D. Brushless PMDC
E. Series Connected Wound Field
F. Shunt Connected Wound Field
G. Compound Connected Wound Field

V. Step Motors

A. Variable Reluctance Step
B. Permanent Magnet Step
C. Hybrid Step
D. Step Motor Performance

VI. Switched Reluctance Motors

VII. Alternating Current (AC) Motors

A. Principle of Electromagnetic Induction
B. Single Phase
C. Split Phase
D. Capacitor Start
E. Permanent Split Capacitor
F. Shaded Pole
G. Three Phase

VIII. Summary

X. References

Instructor: William H. Yeadon, P.E.
Yeadon Energy Systems Inc.

William H. Yeadon, P.E., Yeadon Energy Systems., Iron River, Mich., has over 40 years experience in the electric motor industry including work in design and development, production, quality assurance and engineering management. Prior to starting his consulting firm in 1993, he worked at A.O. Smith, Warner Electric and Barber-Colman Co., Motor Div.