

Department of Agricultural Process Engineering

1 APE 121

Thermodynamics 2 + 1 = 3

Thermodynamics properties. Closed and open system. Flow and non-flow processes. Gas laws, laws of thermodynamics. Internal energy. Application of first law in heating and expansion of gases in non-flow processes. First law applied to steady flow processes. Kelvin Planck and Clausius statements. Entropy, physical concept of entropy, change of entropy of gases in thermodynamics processes. Difference between gas and vapour, change of phase during constant pressure process. Generation of steam, triple point and critical point. Internal energy and entropy of steam. Use of steam tables and Mollier chart, heating and expansion of vapour in non-flow processes, measurement of dryness fraction. Classification of steam boilers, Cochran, Lancashire, locomotive and Babcock-Wilcox boilers. Boiler mountings and accessories.

Practical:

Study of boilers; Study of Cochran, Lancashire, locomotive and Babcock-Wilcox boilers. Study of Study of various mountings and accessories of boilers. Study of steam table and its application. To measure dryness fraction of steam, Determination of calorific value of food material by calorimeter (s).