

Introduction to industrial cooling applications. Vapour compression cooling systems. Basic cooling cycle. Cooling cycle with subcooling and superheating. Real cooling cycle. Multi-stage vapour compression systems. Refrigerants. Calculation of cooling capacity. Gas compression cooling cycle. Stirling Cycle. Basic air humidification cycle. High / low-pressure air humidification cycle. Air humidification with partial expansion. Minimum work required for gas liquefaction. Ejector compression systems. Thermoelectric cooling. Magnetic cooling. Absorption cooling. NH<sub>3</sub>/H<sub>2</sub>O and H<sub>2</sub>O/LiBr refrigeration systems. Adsorption/desorption cooling. Psychrometrics. Sensible heating. Cooling and dehumidification. Bypass factor.