The Working fluids

Chapter no.02

1. **Liquid:**

A liquid is nearly incompressible fluid that conforms to the shape of its container but retains a constant volume independent of pressure.

1. **Vapor:**

Vapour refers to a gas phase at a temperature where the same substance can also exist in the liquid or solid state, below the critical temperature of the substance.

1. **Gases:**

An ideal gas is a theoretical gas composed of many randomly moving point particles whose only interactions are perfectly elastic collisions.

1. **The use of vapor/steam tables:**

* Steam tables are generally used when you deal with steam engines/turbines or other steam involving applications
* We use these tables because hand- calculating all properties may not be possible at times.
* For Example, specific heats for a fluid are a weak non- linear function of temperature.

1. **Specific Enthalpy of Vaporization:**

The heat required to change a saturated liquid to a dry saturated vapor is called the specific enthalpy of vaporization.

1. **Properties of Wet Vapour:**

Wet steam is a mixture of steam and liquid water. It exists at a saturation temperature containing more than 5% water. Wet steam is also known as super-saturated steam.

1. **Properties of super-heated vapor:**

* When the vapor is at a temperature greater than the saturation temperature it is said to exist as super-heated vapor.
* The pressure and temperature of superheated vapour are independent properties, since the temperature may increase while the pressure remains constant.

1. **The characteristic equation of state:**

Equation of state… In Physics and thermodynamics, an equation of state is a thermodynamics equation relating state variables which describes the state of matter under a given set of physical conditions, such as pressure, volume, temperature or internal energy.

1. **Specific Heat Capacity:**

It is the amount of energy that must be added, in the form of heat, to one unit of mass of the substance in order to cause an increase of one unit in its temperature. Units: J/K. Kg

1. **Joule’s Law in Thermodynamics:**

The principal that at constant temperature the internal energy of an ideal gas is independent of volume.