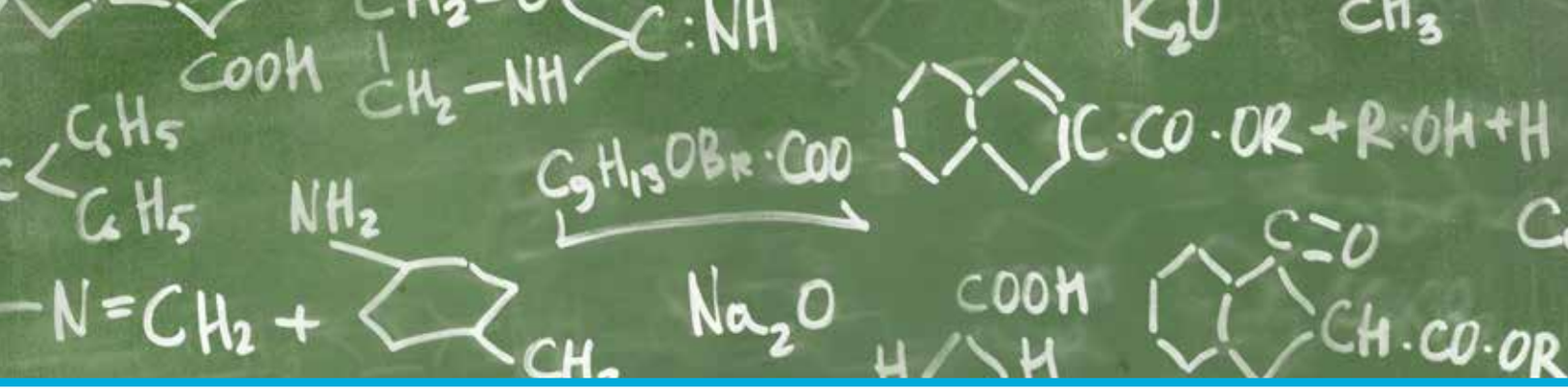

BASIC FORMULAS

H= Head(m) Q = Flow(m³/h) Eff = Pump Eff% Density = SG

Capacity

l/sec x 3.6 = m³/h	m³/h ÷ 3.6 = l/sec
Imp gpm x 0.2271 = m³/h	m³/h x 4.403 = Imp gpm
US gpm ÷ 0.246 = l/min	l/min x 0.246 = US gpm
10000 kg/hr =	$\frac{10m^3h}{\text{Density(SG)}}$

Head/Pressure

Ft ÷ 3.28 = m	m x 3.28048 = Ft
Bar x 100 = kpa	
m x 9.805 = kpa	kpa x 0.102 = m
m x 0.098 = Bar	Bar x 10.19 = m
m x 1.45 = psi	
psi x 6.895 = kpa	

Power

hp x 0.746 = kw	kw x 1.340483 = hp
kw abs =	$\frac{Q \times H \times SG}{367 \times Eff(\%)}$
kw =	$\frac{\text{Amps x Volts x Power Factor x } 1.732}{1000}$
RPM =	$\frac{Hz \times 120}{\text{No of Poles}}$
Hz =	$\frac{\text{RPM x No Of Poles}}{120}$
Velocity m/sec =	$\frac{Q \times 353.63}{(\text{Pipe Dia})^2}$

Efficiency

EFF(%) = $\frac{Q \times H \times SG}{367 \times kw(abs)}$

Temperature

Deg.C = (deg.F-32) x 0.556

Deg.F = (1.8 x deg.C) + 32

Peripheral Speed

Peripheral Speed(Impeller) = $\frac{\text{imp.dia.(mm) x } \pi \text{ x N(Rpm)}}{60 \times 1000}$

Viscosity

vis Viscous Liquid

w Water

Given: Qvis in m³/h kinematic viscosity v in mm²/s

Hvis in m pvis in kg/dm³

Qw = $\frac{Qvis}{CQ}$

Hw = $\frac{Hvis}{CH}$

Qw = C% x %w

Pvis = $\frac{Qvis \times Hvis \times Pvis}{367 \times Eff(\%) \text{ vis}}$

Centrifugal and Axial Flow Pump Affinity Laws:

Speed changes & impeller diameter remains the same:

$Q1/Q2 = N1/N2$

$H1/H2 = (N1/N2)^2$

$P1/P2 = (N1/N2)^3$

Impeller diameter changes and speed remains the same:

$Q1/Q2 = D1/D2$

$H1/H2 = (D1/D2)^2$

$P1/P2 = (D1/D2)^3$