Day 1

• Achievable benefits of pump system assessment and optimization
• System curves, energy consumption and system controls
  ▪ Exercise 1 – Developing the system curve
  ▪ Exercise 2 – Calculating power consumption and control losses
• Pump curves, variable speed pumping, parallel & series pumping
• Pump design, NPSH, allowable and preferred operation
  ▪ Exercise 3 – Pump specific speed & attainable efficiency
  ▪ Exercise 4 – Driver input power & annual operating costs
  ▪ Exercise 5 – NPSHA for open system
  ▪ Exercise 6 – NPSHA for closed system
  ▪ Exercise 7 – Suction specific speed
• Common Operating Problems
• Pump System Components
  ▪ Valves, drivers, variable speed drives, mechanical seals, bearings
  ▪ Exercise 8 – Driver input power and pump input power

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