PUMP MAINTENANCE
FOR WATER & WASTEWATER PERSONNEL
STARTING POINT

• NEW PUMPS
  • PERFORMANCE PARAMETERS
  • TEST & DOCUMENT
  • RE-TEST ANNUALLY
  • DOCUMENT ANNUAL TESTING
STARTING POINT

• NEW PUMPS

• PERFORMANCE PARAMETERS
  • AMP DRAW
  • FLOW RATE
  • PRESSURE
STARTING POINT

• OLD PUMPS
  • PERFORMANCE PARAMETERS
    • AMP DRAW
    • FLOW RATE
    • PRESSURE
STARTING POINT

• OLD PUMPS

• PERFORMANCE PARAMETERS
  • USE HISTORY (IF DOCUMENTED
  • O&M
MAKE IT LAST…

• EQUIPMENT IS A MECHANICAL EMPLOYEE, GIVE IT A LONG AND HEALTHY CAREER.
  • INSPECTION
  • BASIC CARE
  • TUNING
INSPECTION

• OPERATOR’S ROUNDS ARE THE MOST FREQUENT PREVENTIVE MAINTENANCE ACTIVITY
INSPECTION

• USE YOUR SENSES
  • LOOK IT OVER
  • LISTEN FOR TROUBLE
  • TOUCH THE PARTS
    • HEAT
    • VIBRATION

• ANYTHING CHANGED?
• WE CALL IT “RUSTY” FOR SHORT
INSPECTION

• LOOK IT OVER
  • PAINT IN GOOD CONDITION?
    • FLAKING OFF
    • CHANGE OF COLOR DUE TO HEAT

• ANYTHING CHANGED?
INSPECTION

• LISTEN FOR TROUBLE
  • LOUDER THAN USUAL
  • WHINING OR SINGING
  • THUMPING OR KNOCKING

• ANYTHING CHANGED?
INSPECTION

• TOUCH THE PARTS
  • ANYTHING LOOSE?
  • HEAT
  • VIBRATION

• ANYTHING CHANGED?
BASIC CARE

• LOOK FOR LEAKS
• BEARINGS ARE YOUR FRIENDS
• VEXING VIBRATIONS
• PERFORMANCE PARAMETERS
• EXTRA-EXTRA-READ ALL ABOUT IT!
BASIC CARE

• LOOK FOR LEAKS
  • PUMPS WITH MECHANICAL SEALS SHOULD NOT LEAK
  • PUMPS WITH PACKING MUST DRIP
  • NEVER FROM THE CASING

• RUSTY IS NEVER A GOOD NICKNAME FOR A PUMP
BASIC CARE

• HOW MANY RINGS OF PACKING?
BASIC CARE

• BEARINGS ARE YOUR FRIENDS
• O&M RECOMMENDATIONS
• WARRANTY
BASIC CARE

• BEARINGS ARE YOUR FRIENDS
• QUANTITY
• MIXING
• CLEAN & DRY
BASIC CARE

• BEARINGS ARE YOUR FRIENDS

  • TURN IT OFF
  • IF POSSIBLE
  • IF NOT POSSIBLE
BASIC CARE

• BEARINGS ARE YOUR FRIENDS

• IF NOT POSSIBLE
  • SLOW STUFF
  • FAST STUFF
BASIC CARE

• BEARINGS ARE YOUR FRIENDS

• IF YOU TAKE IT APART, GET A NEW ONE
BASIC CARE

• BEARINGS ARE YOUR FRIENDS

• IF YOU TAKE IT APART,

  • DON’T DROP IT, A DROPPED BEARING IS SCRAP
BASIC CARE

• BEARINGS ARE YOUR FRIENDS

• IF YOU TAKE IT APART, WATCH OUT FOR THE PARTS CLEANER
BASIC CARE

• BEARINGS ARE YOUR FRIENDS
• DON’T RE-USE
BASIC CARE

• VEXING VIBRATIONS
  • HIGH SPEED EQUIPMENT WILL HAVE A VIBRATION SPECIFICATION
  • O&M
  • FOUNDATION
  • IMPELLERS
BASIC CARE

• PERFORMANCE PARAMETERS - CENTRIFUGAL

• NAMEPLATE DATA
  • - GPM @ FT OF HEAD
  • HP
  • RPM
  • SERVICE FACTOR & INSULATION
BASIC CARE

• PERFORMANCE PARAMETERS - CENTRIFUGAL

• PUMP CURVE –
  • ACCEPTABLE OPERATING RANGE
  • NET POSITIVE SUCTION HEAD - NPSH
  • NET POSITIVE DISCHARGE HEAD - NPDH

• PRESSURE GAUGES – ACTUAL NPSH & NPDH CONDITIONS

• FLOW METER – GPM
BASIC CARE

• PERFORMANCE PARAMETERS - CENTRIFUGAL
  • REPLACEABLE WEAR COMPONENTS
    • PACKING
    • WEAR RINGS
    • IMPELLERS
BASIC CARE

• PERFORMANCE PARAMETERS — POSITIVE DISPLACEMENT

• NAMEPLATE DATA —
  • HP,
  • GPM,
  • MAX PRESSURE
BASIC CARE

• PERFORMANCE PARAMETERS – POSITIVE DISPLACEMENT
  • PUMP CURVE
  • PRESSURE GAUGES
  • FLOW METER
BASIC CARE

• PERFORMANCE PARAMETERS — POSITIVE DISPLACEMENT

• SAFETY DEVICES
  • WATER HAMMER REDUCERS
  • SURGE TANKS
  • PIPING DESIGN
• RUPTURE DISKS
• BYPASS SYSTEMS
BASIC CARE

• PERFORMANCE PARAMETERS
  • TEST PERFORMANCE ANNUALLY
  • DOCUMENT ANNUAL TESTING
BASIC CARE

• EXTRA-EXTRA-READ-ALL-ABOUT-IT!

• O&M MANUAL(S)

• PLANT SPECIFICATIONS

• WORK ORDER HISTORY
TUNING

• PUMP OUTPUT – CENTRIFUGAL
  • SPEED - VARIABLE FREQUENCY DRIVES
  • SPEED – EDDY-CURRENT CLUTCH/MAGNETIC DRIVES
TUNING

- PUMP OUTPUT - CENTRIFUGAL
  - GPM - FLOW CONTROL DISCHARGE VALVES (NEVER SUCTION)
  - GPM – IMPELLER SIZE
TUNING

• PUMP OUTPUT – POSITIVE DISPLACEMENT
  • SPEED= GPM - GEAR REDUCERS & SHEAVES
  • VOLUME= GPM - VARYING STROKE LENGTH
THE WRAP UP

• ROUNDS
• PAINT & KEEP IT CLEAN
• READ ALL ABOUT IT
• LOOK, LISTEN & TOUCH
• TEST & DOCUMENT