Dr Pump Energy Audit Checklist

1. Basic Pump Information

- Record pump type (end-suction / split case)
- Nameplate data (flow, head, efficiency, motor kW)
- Operating hours per year
- Control method (fixed speed / throttling / VFD)

2. System Demand & Sizing

- Compare design flow vs. actual system demand
- Check if pump operates near Best Efficiency Point (BEP)
- Look for signs of oversizing (excessive throttling, bypass flow, high energy use)

3. Energy Measurement

- Measure motor power draw (kW)
- Record flow rate (m^3/h or gpm)
- Record differential head (m or ft)
- Calculate wire-to-water efficiency (%)
- Benchmark against similar systems / standards

4. Control & Operation

- Is a VFD installed and properly tuned?
- Check setpoints for pressure/flow — are they optimized?
- Look for unnecessary parallel pump operation
- Review operating schedules — avoid running pumps when demand is low/off

5. Maintenance & Condition

- Inspect impeller and casing for wear or damage
- Check alignment of pump and motor shafts
- Verify bearing and seal condition
- Inspect suction strainers and filters (clogging increases head loss)
- Listen for cavitation or vibration issues

6. Piping & System Design

- Verify suction piping is straight, short, and correctly sized
- Check for excessive elbows, fittings, or undersized piping
- Confirm valves are fully open (no throttling for flow control)
- Inspect for leaks in suction or discharge lines

7. Improvement Opportunities

- Right-size pumps (trim impeller or replace if grossly oversized)
- Install / optimize VFDs
- Upgrade to high-efficiency pumps and motors
- Implement predictive maintenance (vibration/condition monitoring)
- Train operators on energy-efficient pump operation

8. Reporting

- Summarize current energy cost (kWh/year × cost per kWh)
- Estimate potential savings (%) from improvements
- Calculate simple payback period for recommended upgrades