Industry Partners Meeting
Industrial Pump Systems Group

Barriers and Opportunities for Pumping Efficiency Programs

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Agenda

- Introduction
- Pump Industry Panel:
  - Bob Domkowski, ITT/Flygt
  - Chris Lucas, Belzona
- Efficiency Program Perspective:
  - Leanne Whitehead, Tennessee Valley Authority
- Discussion:
  - *What are the core elements of a bi-national program strategy for industrial pump systems?*
  - *What mutual expectations should efficiency programs and pump vendors/servicers have of one another?*

Objectives

- Vendors-servicers: Get a sense for program offerings and interests in pumping systems
- Programs:
  - Learn from vendor-servicer perspective of pumping market and point of sale
  - Identify direction for future pump systems work at CEE

Brief History of the CEE Pump Systems Group

- CEE member program administrators with responsibility for pumping efficiency programs serving the industrial, water-wastewater, or agriculture sectors
- Initiated in at CEE January Mtg, 2010
- Current role: Develop scope and direction of pumping systems work at CEE, for 2011 and beyond

Introductions

- Your Name
- Organization/Company
- Offerings to Water-Wastewater sector
  - Programs: Do you offer incentives or other resources for pumping projects? Custom or mass market approach?
  - Vendors/servicers: Have you worked with efficiency programs?

Vendor-Servicer Panel

- What are the most common types of pump projects your company supplies equipment or performs?
  - What is the context of that customer interaction (e.g. equipment failure, new construction, other)?
- What hurdles do pump customers face in applying for efficiency program incentives?

General Industrial Energy Efficiency
(Less than 5 MW)

QUICK PSAT Overview
QPSAT

August 24, 2010

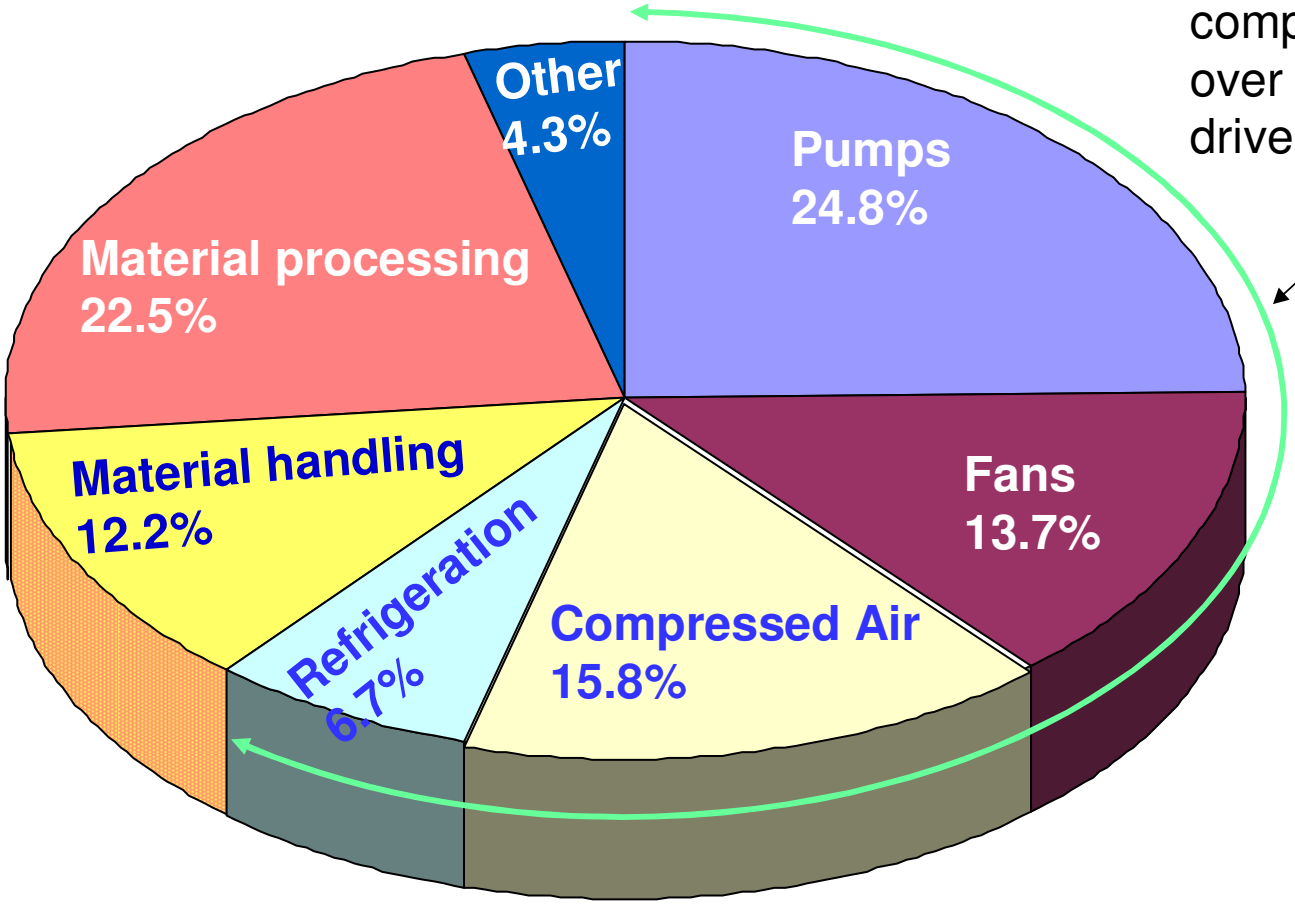
Motor-driven equipment is a dominant electricity consumer in industry

Industrial motor systems:

- are the *single largest electrical end use* category in the American economy
- account for 25% of all U.S. electrical sales

PSAT slides – US Dept. of Energy

Pumps are the largest industrial user of motor-driven electrical energy



Fluid handling equipment, including pumps, fans, and compressors, account for over 60% of industrial motor-driven energy.

PSAT slides – US Dept. of Energy

Pump System Assessment Tool (PSAT)

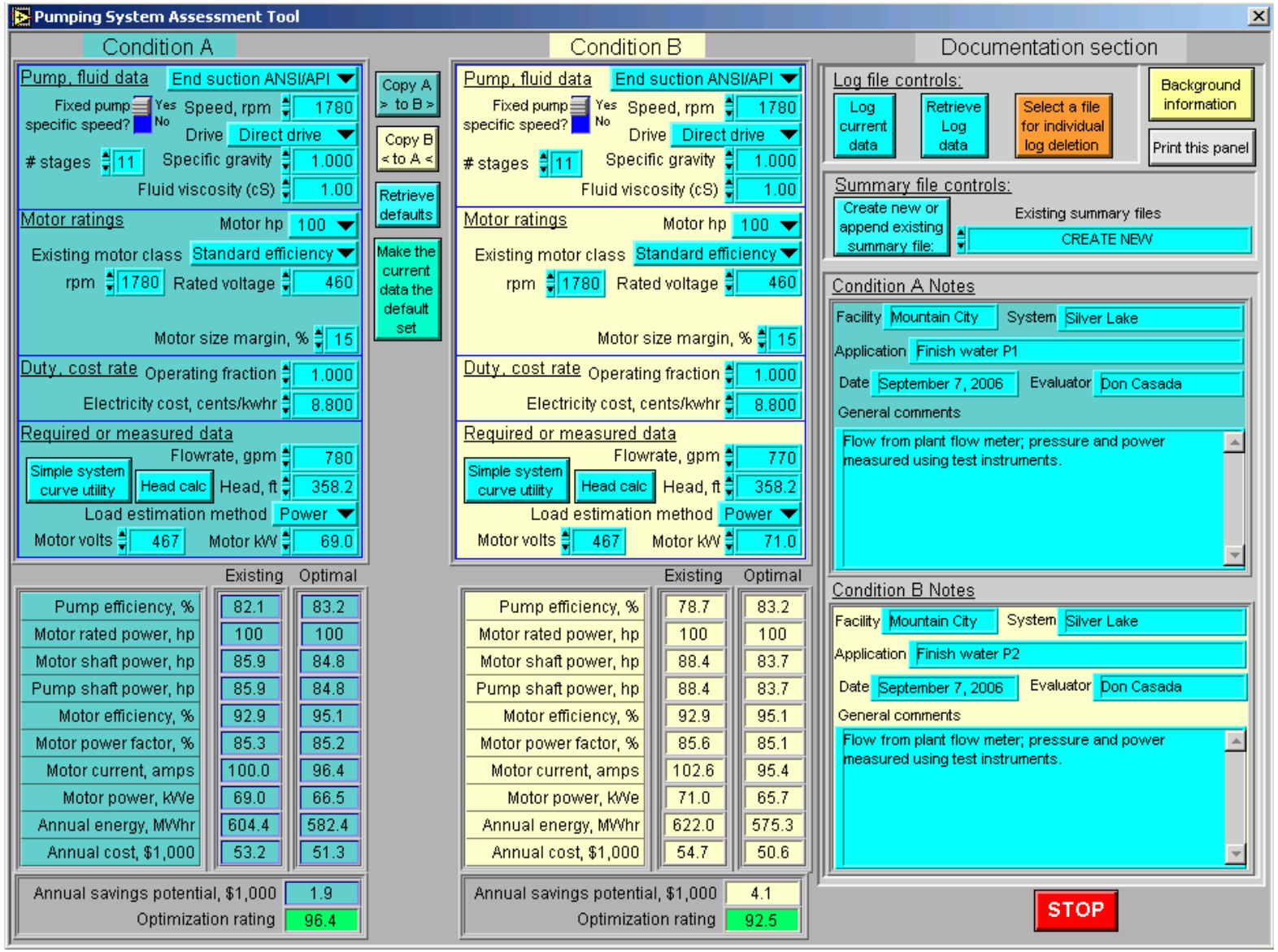
- Pump System Assessment Tool (PSAT)
  - An online computer program
  - Developed by U.S. Department of Energy (DOE)
  - Used in pumping system diagnostics
- Three-tiered prescreening and assessment approach
  - Initial prescreening based on size, run time, and pump type
  - Secondary screening to narrow the focus to systems where significant energy reduction opportunities are more likely
  - Finally, opportunity assessment and quantification of potential savings

PSAT slides – US Dept. of Energy

Comparisons PSAT to Quick PSAT

- Traditional “PSAT” requires:
  - Numerous input fields
  - Extensive classroom and field training
  - Field data taken to another location for calculation
  - “Busy” results table – results may be difficult to interpret
  - Used with desktop or laptop computer
- “Quick PSAT” is less complicated with:
  - Less intensive user inputs (voltage, amperage, horsepower, fluid flow rates)
  - Easy for maintenance staff to do “on-the-spot” testing
  - Allows for real time pump testing
  - Reduces the likelihood of errors in transcribing numbers
  - Data can be stored for later downloading and use
  - Field testing has been conducted with water customers using both programs and will be extended to interested industrial customers. Results have shown that the two programs are comparable, within a 3-5 % tolerance
  - Internet application or on various operating platforms including:
    - “smart phones”
    - Handheld devices
    - IPAD/ net books

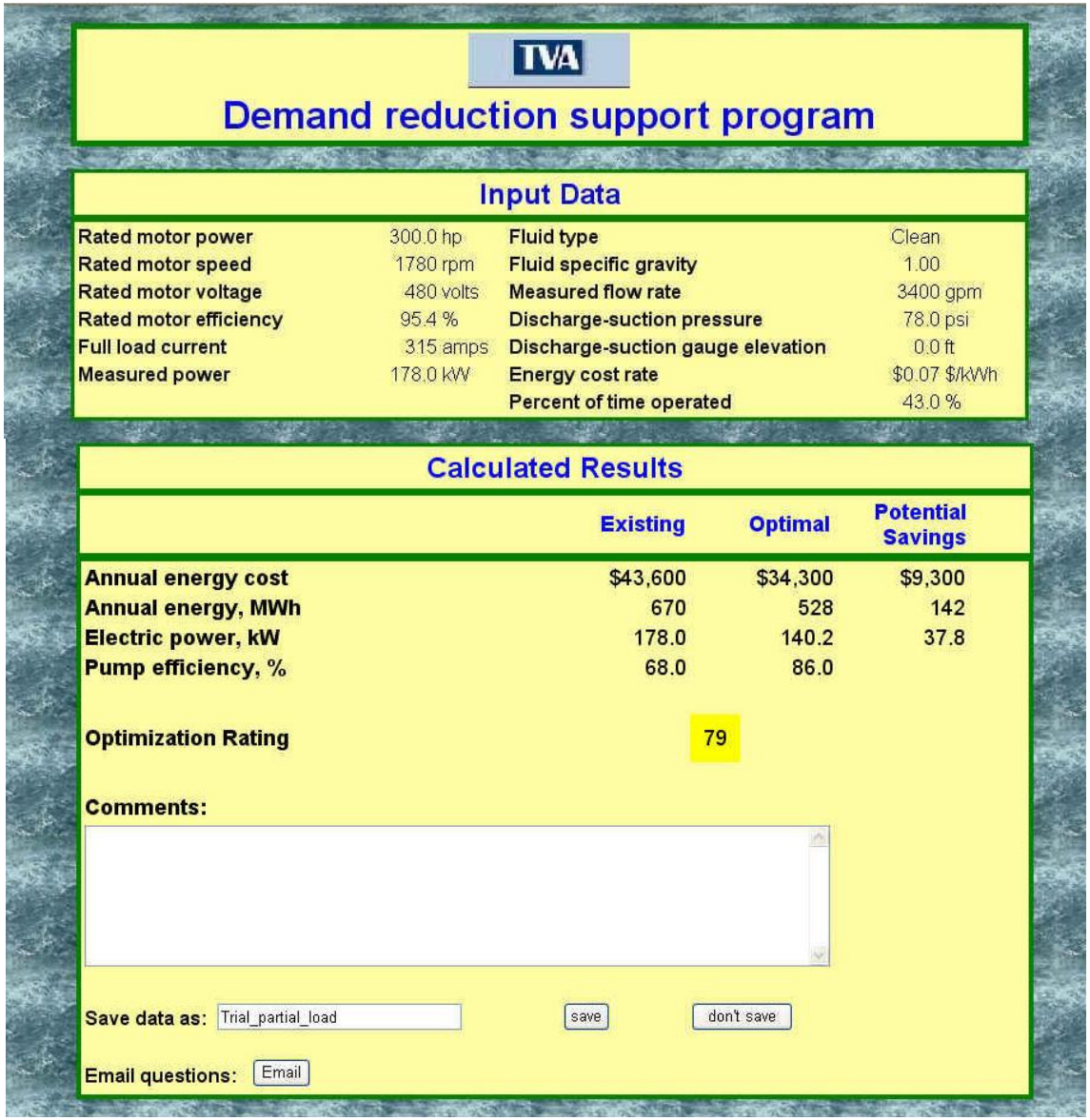
Traditional PSAT Screen results indicating a good rating



PSAT Quick Entry Screen

- **13 entry fields**
- **Much simpler look**

PSAT Quick Output



TVA

Demand reduction support program

Input Data

Rated motor power	300.0 hp	Fluid type	Clean
Rated motor speed	1780 rpm	Fluid specific gravity	1.00
Rated motor voltage	480 volts	Measured flow rate	3400 gpm
Rated motor efficiency	95.4 %	Discharge-suction pressure	78.0 psi
Full load current	315 amps	Discharge-suction gauge elevation	0.0 ft
Measured power	178.0 kW	Energy cost rate	$0.07 $/kWh
		Percent of time operated	43.0 %

Calculated Results

	Existing	Optimal	Potential Savings
Annual energy cost	$43,600	$34,300	$9,300
Annual energy, MWh	670	528	142
Electric power, kW	178.0	140.2	37.8
Pump efficiency, %	68.0	86.0	

Optimization Rating 79

Comments:

Save data as: Trial_partial_load save don't save

Email questions: Email

Benefits of "PSAT Quick"

- Easy to understand and easy to use
- Inefficient equipment more easily identified
- Better focus of consultants' time on the worst equipment
- PSAT created for DOE "Save Energy Now" (SEN) for largest industrial customers (> 5 MW)
- "Quick PSAT" gives smaller industrial customers a useful tool
- Field test comparisons made with both
  - Comparable results
  - Conducted with water customers
  - Will be extended to interested industrial customers

Opportunities for use of “Quick PSAT”

- Tool in Local Power Company and Efficiency Programs
  - Fits into a prescriptive or custom program environment
  - Used by end-user account for self-assessment
  - Used by local Trade Ally members
- Nationally recognized pumping consultant can be on retainer
  - Answer questions about the use of the tool
  - Consult on results for a maximum specified timeframe
- If used by Trade Allies, can establish a link between more effiecient equipment and availability of equipment to meet customer needs when replacement desired to meet critical customer schedule
- User Group can be organized for interested water plant customers and in time extended to industrial customers (cleaner application with no complicating solid matter)
- Duke Energy has a prescriptive pump replacement program for up to 200 hp (for certain operating environments)
- “Quick PSAT” can be the first of a family of online tools to be developed for the C&I customer base –fan assessment would be the next best target

Mass Market Strategy for Pumps: Core Components

- Consistency in efficiency program data needs
- Standard means of generating pump data
  - PSAT Quick or other assessment tool
- “Boots on the ground”: Trade Ally component
  - Vendors/servicers performing assessments at customer facilities (lighting industry model)
- Planning-decision making materials (customer facing)
- Delivery vehicle

Big Questions

- Is a unified program strategy compelling?
  - Does it overcome hurdles already identified?
  - Does it offer value to vendors/servicers?
- Is it feasible?
  - Programs:
    - Consistent project data inputs
    - Mass market (calculated) incentive approach
  - Vendors/servicers:
    - Use efficiency program industry-endorsed tool
    - Coordinate with efficiency programs

Share Your Thoughts

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