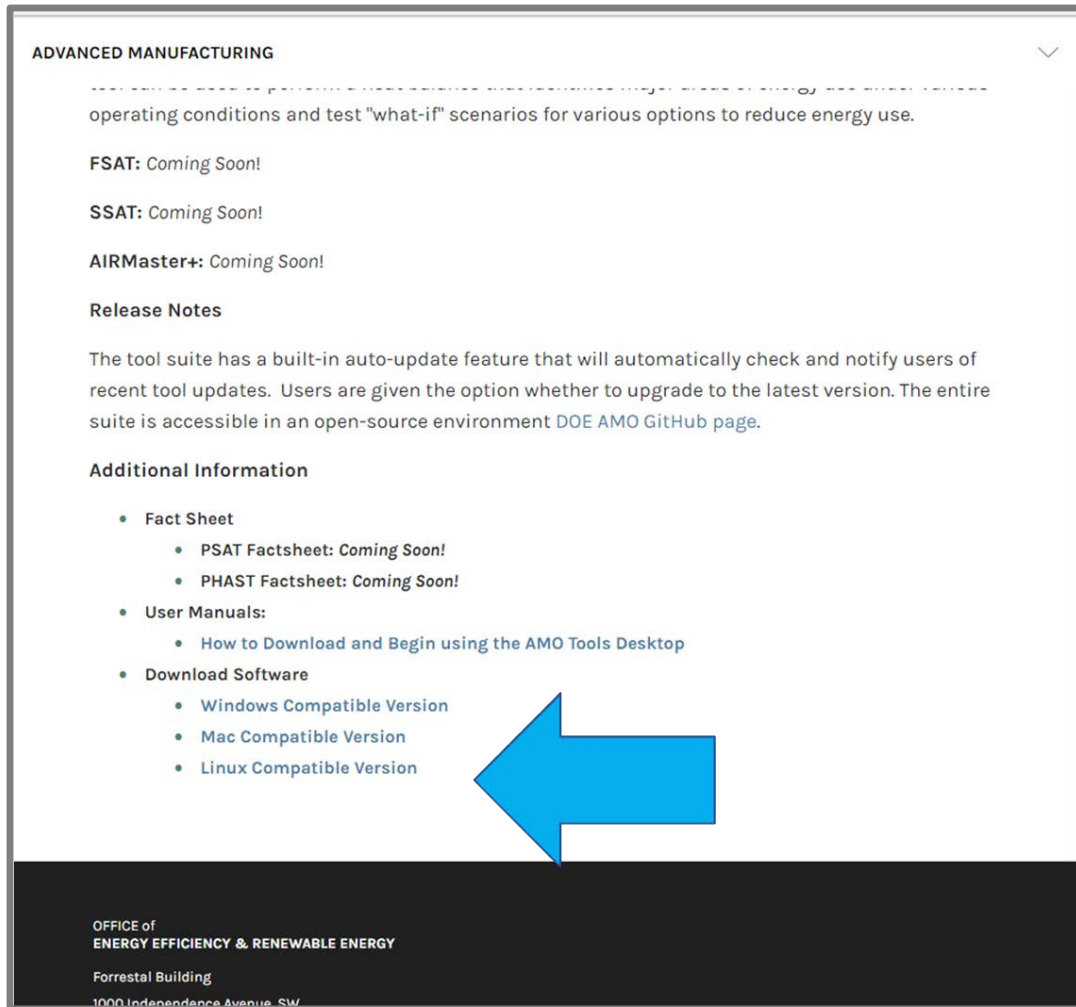# How to Download and Begin using MEASUR:

The Manufacturing Energy Assessment Software for Utility Reduction
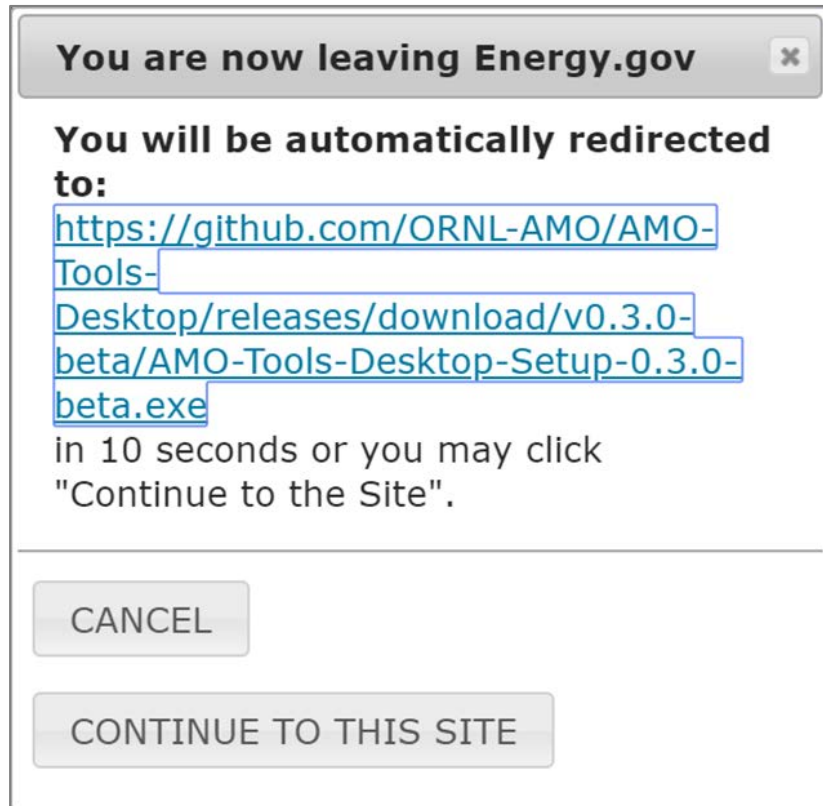
Download via DOE-EERE- AMO website

- https://www.energy.gov/eere/amo/measur
- Includes overview of the effort to reprogram our legacy tools
- Scroll to the bottom to find and download your version

Download via DOE-EERE- AMO website

You are now leaving Energy.gov ✕

You will be automatically redirected to:
https://github.com/ORNL-AMO/AMO-Tools-Desktop/releases/download/v0.3.0-beta/AMO-Tools-Desktop-Setup-0.3.0-beta.exe
in 10 seconds or you may click "Continue to the Site".

CANCEL

CONTINUE TO THIS SITE

- This message will appear indicating that the file you are downloading is hosted on another website.
- That web site is GitHub, the common repository for software applications and is perfectly safe.

Download

- Click the file extension that matches your operating system
- Open the download
- Click "Run"
- Follow the instructions for the Installation Wizard
- If updating via the webpage DO NOT uninstall first
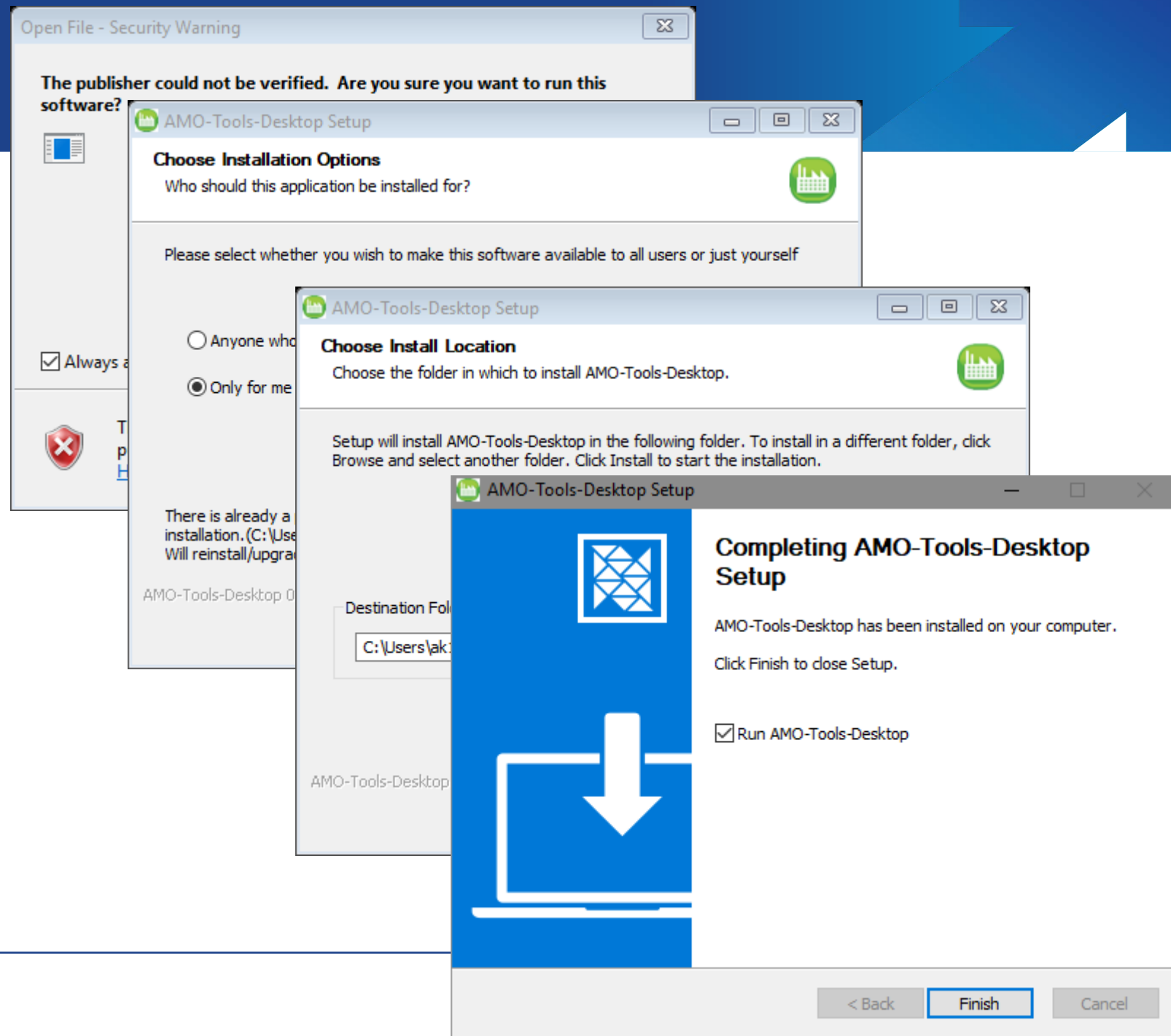
Updating

- This Tool is in beta, so we are constantly upgrading it and publishing releases fairly often.
- After installation, if an update becomes available, a popup will appear at startup to notify you.
  - You can choose to update right away, or you can wait.
  - If for some reason this does not happen, you can download from the AMO Tools Download Center
- DO NOT UNINSTALL before updating, you will lose ALL your assessments.

Using MEASUR
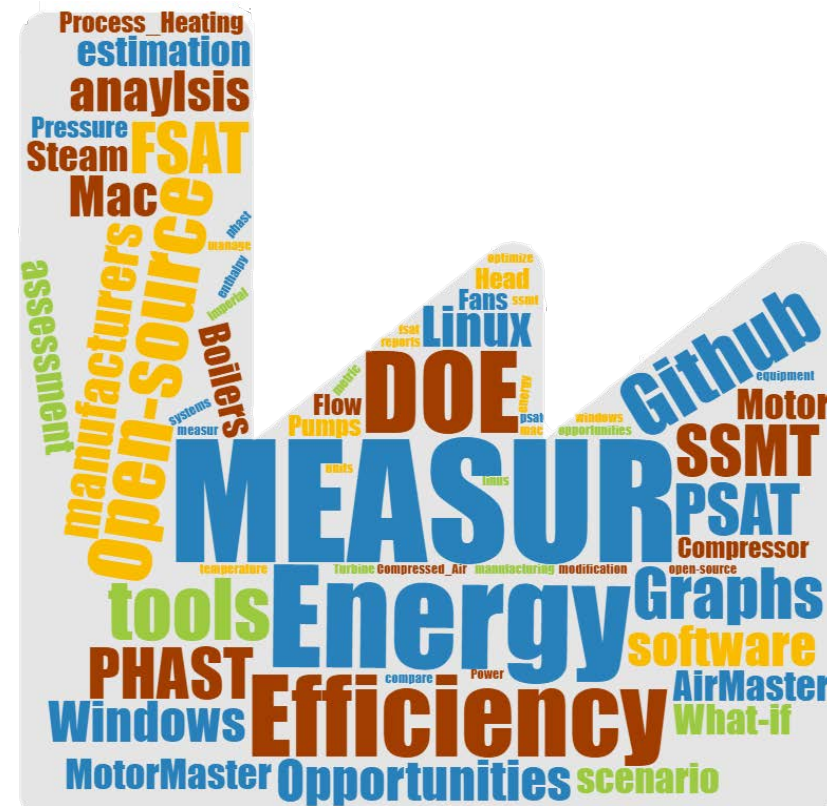
Getting Started

- ➡️ **Start an assessment**
- ➡️ **Create an inventory**
- ➡️ **View Assessment Dashboard**
- ➡️ **Use Properties & Equipment Calculators**
- ➡️ **Help and User Experience**
  - Change Settings
  - View Tutorials
  - Manage Custom Materials
  - Provide Feedback
  - Translate

Settings

- ## Set global units & utility costs
- ## Change language
  - ### MUST be connected to internet
- ## Turn on/off Tutorials
- ## Clear Data

General Settings ⌄

These will be default settings for any new assessments and folders.

Language	Translate Application Using Google Translate
Currency	$ - US Dollar ▾
Units of Measure	⦿ Imperial ◯ Metric
Energy Result Unit	Millions British Thermal Units (MMBtu) ▾
Default Panel Tab	⦿ Results ◯ Help

Energy Costs for Operation

Fuel	3.99	$/MMBtu
Steam (as utility)	4.69	$/klb
Electricity	0.066	$/kWh
Compressed Air (as utility)	0.022	$/SCF
Other Fuel	0	$/MMBtu
Water	0	$/gal
Waste Water	0	$/gal

Pump Settings ⌃

Process Heating Settings ⌃

Fan Settings ⌃

Steam Settings ⌃

Tutorial Settings ⌃

Restore System Settings

Restoring system settings will provide options for resetting all application settings to their default values, returning all example assessments to their original state, deleting all user-created assessments/pre-assessments, and deleting all user-created materials. This cannot be undone!

Restore System Settings

Tutorials & Feedback

- **View all Tutorials**
- **Let us know if you like MEASUR!**
  - Survey
- **Bug Reporting**
  - Email
    - accawigk@ornl.gov
    - armstrongko@ornl.gov
  - Download full Data set
    - This will help us identify the problem
  - Screenshots please
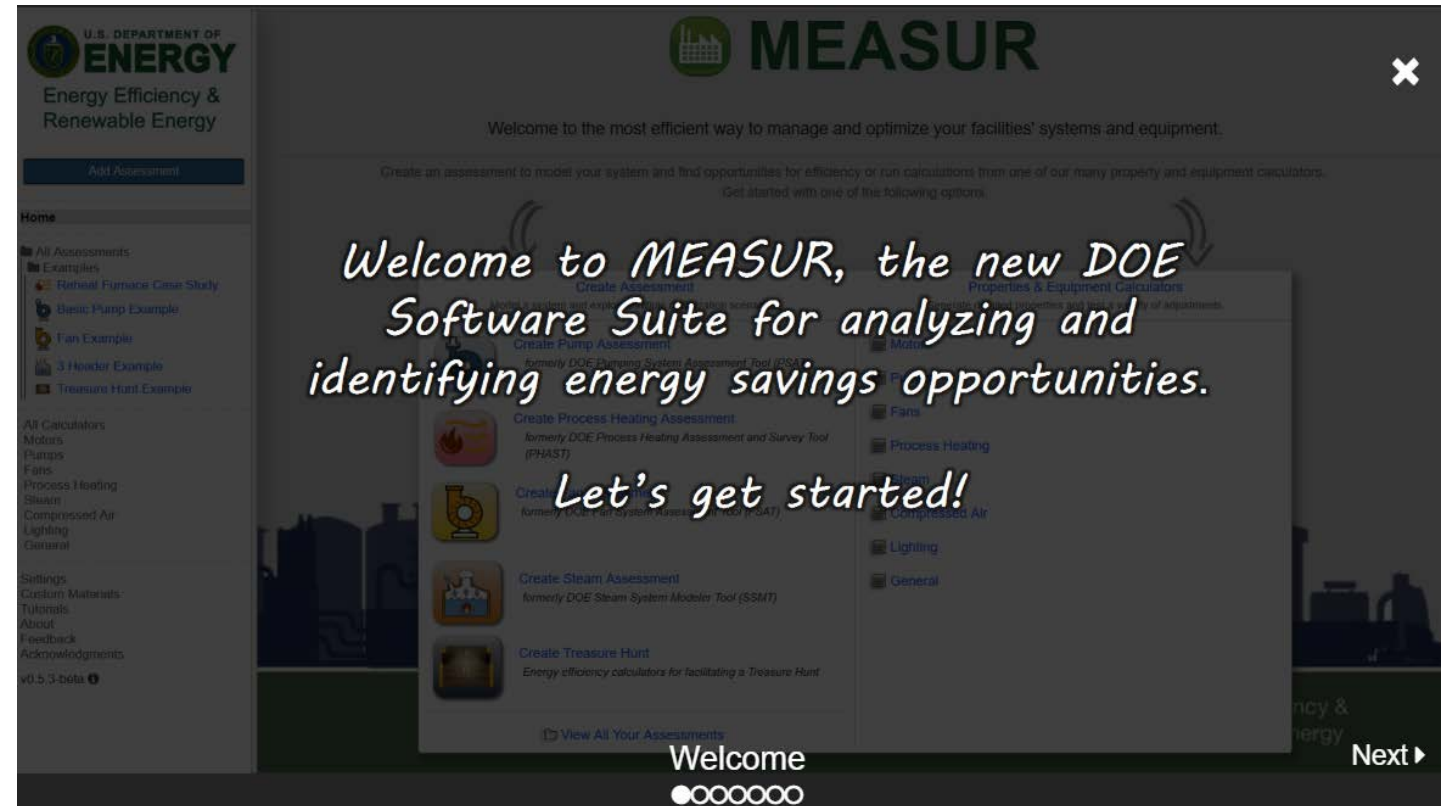
Dashboard - Overview

View all your assessments in a folder-based organization

- **→ (blue)** Move, copy, import and export assessments
- **→ (red)** Add/view facility information and folder-wide settings
- **→ (yellow)** Make pre-assessment screenings
- **→ (orange)** Generate rollup reports of several assessments
- **→ (blue)** Add New Assessment
- **→ (green)** Add New Inventory

Dashboard – Folders are Facilities

The Dashboard is designed to treat each folder like a facility or business unit

Enter information about facility. This will appear in reports

Quick Summary of all assessments in folder

Set units and utility costs for any NEW assessments created

Dashboard - Pre-Assessments

Pre-Assessments are to help you triage equipment to best utilize assessment time

Enter either design specifications or meter data to determine your priorities
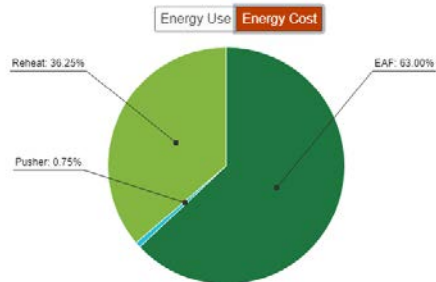
Switch between Energy Use and Cost if equipment uses different fuel

Graphed to quickly see most impactful

Dashboard - Rollup Reports

Create Rollup Reports to see the impacts of opportunities on overall energy use

Key Features - Help Text & Tutorials

- **Tutorials**
  - Help to get started using tool

- **Help text for each data entry field**
  - Diagrams to help understand where to obtain data
  - Can switch between help or results being shown by default

Key Features – Customize Units & Notes

- Units are easily customizable and can be changed after data entry!
- Add notes on assessment conditions to add to report

Charge (wet)-Feed Rate   4226   lb/hr

1 Assessment Settings   **2** Heat Balance   **3** Aux Equipment   **4** Design Energy Use   **5** Mete

REHEAT FURNACE 2 SETTINGS

Your units have changed! Click here to update your data to reflect these changes!

Language	English
Currency	$ - US Dollar
Units of Measure	○ Imperial ● Metric
Energy Result Unit	Gigajoules (GJ)

Can also change unit settings for all new assessments in global settings or in the dashboard

Charge (wet)-Feed Rate   1916.8798   kg/hr

Starting an Assessment

- Choose a unique name for the assessment
- Set Assessment type (Pump, Fan, Process Heater, Steam, Treasure Hunt)
- Choose folder location
  - Or make a new folder

System Setup

Start with current equipment and operations - Baseline

- Assessment Settings: Set units and basic assessment settings
- Assessment Specific Tabs
  - Data Entry for baseline assessment
  - Intermediate Results
  - Help text for each data entry field

Assessments

Explore energy savings opportunities

- **Explore Opportunities: build scenarios from pre-established energy savings measures**
- **Modify All Conditions: build scenarios using same forms as baseline**
  - Badges and field highlighting for visual cues

Reports

View side-by-side comparison of all scenarios and graphs for data visualization
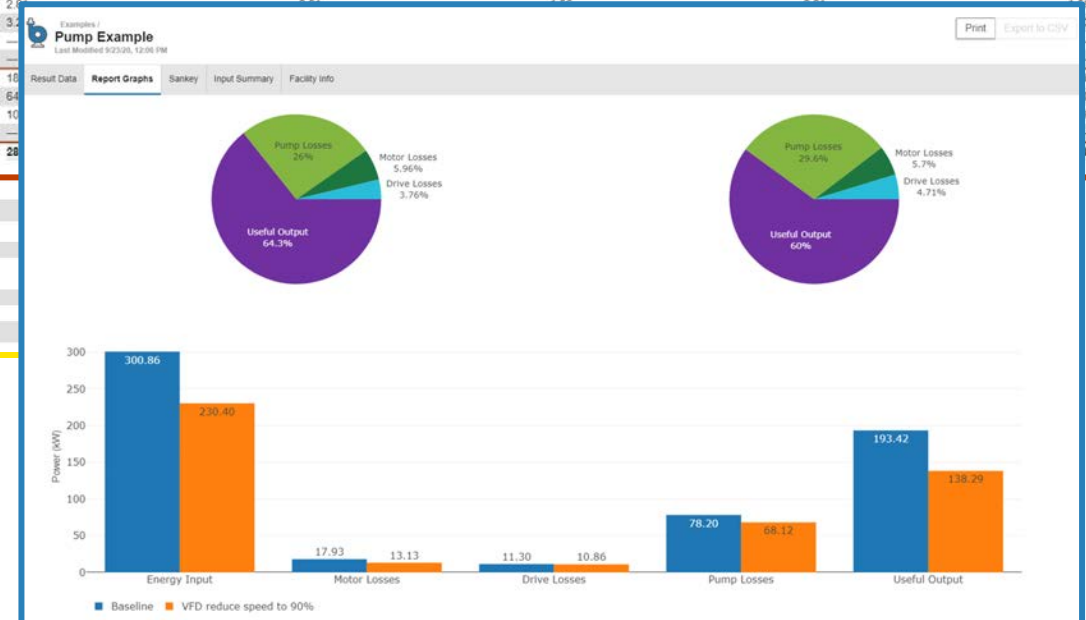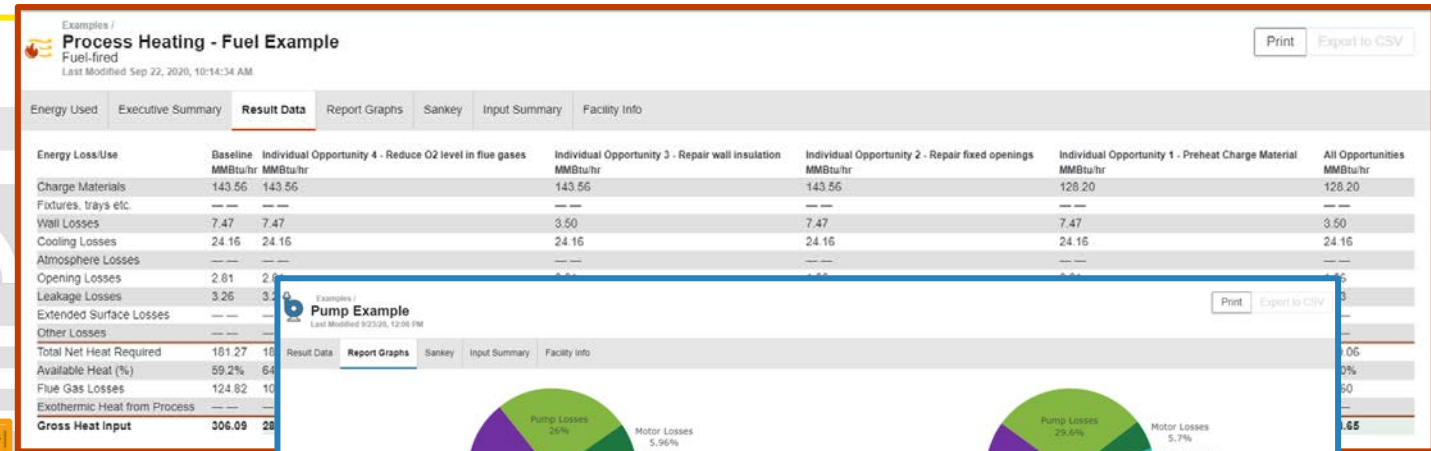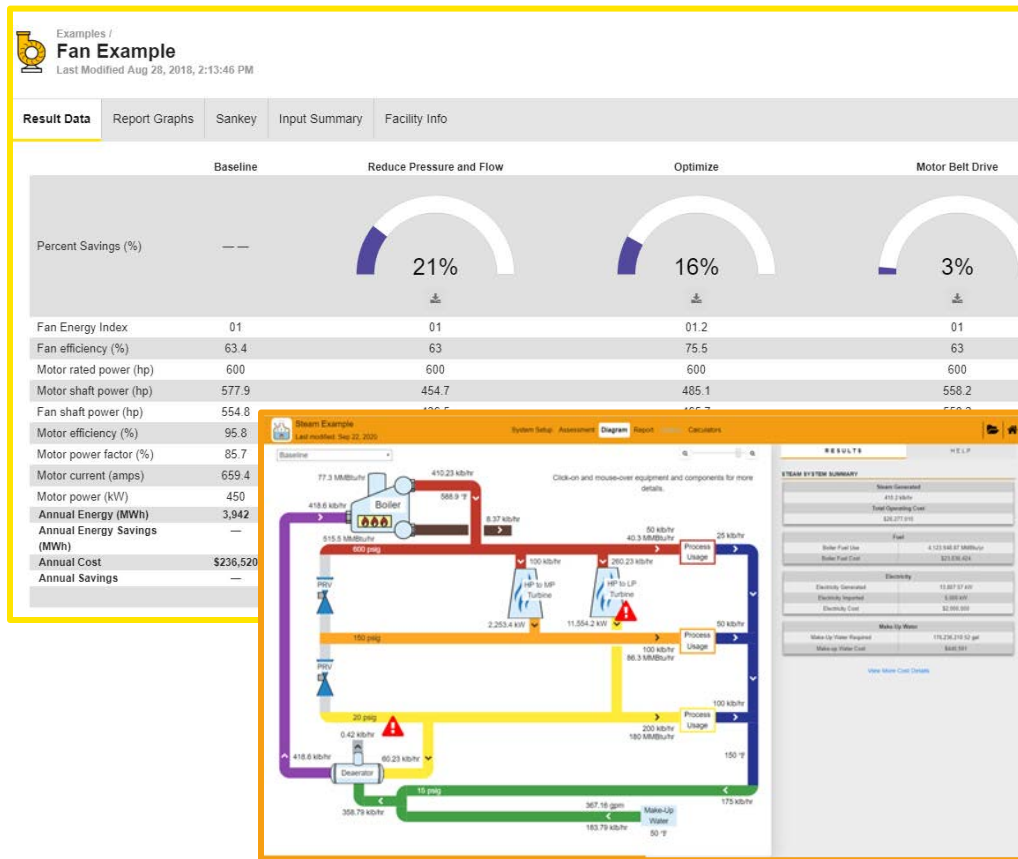
Reports - Printing

Print to PDF for Assessment Reports & Rollup Reports

Assessments

- **5 different assessment types**
  - Pumps
  - Process Heating
  - Fans
  - Steam System
  - Treasure Hunt

Pumps

- Compute motor full load amps, load current and power factor, fluid head, and fan and motor efficiency
- Explore the savings from changing pump and motor efficiency (which can be optimized automatically), flow and head, or even fluid temperature

Process Heating

- Calculate heat losses from several heater components
- Explore the savings from reducing flue gas oxygen or temperature, preheating air or charge materials, controlling furnace pressure, closing openings, etc.

Fans

- Compute motor full load amps, load current and power factor, pressure and flow from a traverse analysis, and fan and motor efficiency

- Explore the savings from changing fan and motor efficiency (which can be optimized automatically), flow and pressure, or even fluid characteristics

Steam

- Determine steam flows, fuel use, electricity production throughout system
- Explore the savings from adding/removing turbines, adding flash tanks, increasing condensate recycle, etc.

Treasure Hunt

- Find low/no cost energy savings opportunities in motor systems, process heating, compressed air, lighting, etc.

Calculators

- **50+ Stand alone Calculators**
  - Motors
  - Pumps
  - Fans
  - Process Heating
  - Steam
  - Compressed Air
  - Lighting
  - General
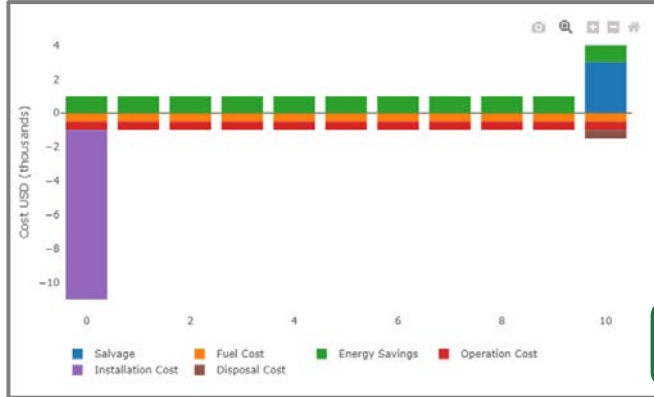- **Access via sidebar or center**

Calculators

- **50+ Stand alone Calculators**
  - Motors
  - Pumps
  - Fans
  - Process Heating
  - Process Cooling
  - Steam
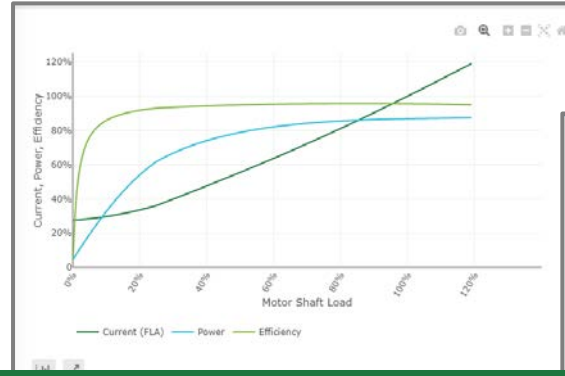 - Compressed Air
  - Lighting
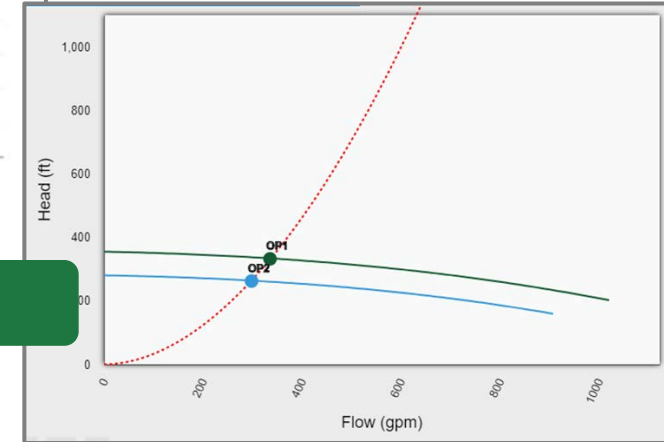 - General
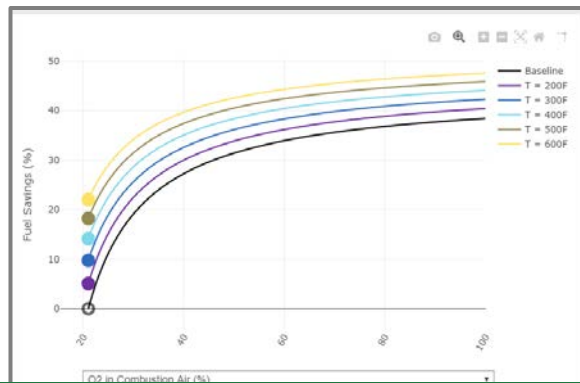- **Most have graphical results**

Example Calculators

Cash Flow Diagram

Motor Performance

Pump Curve

Pre-assessment

O$_2$ Enrichment
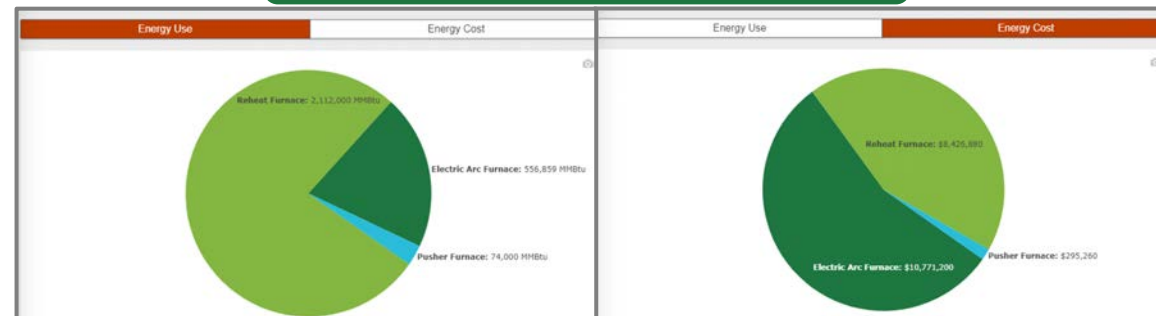
Other features

- Data Exploration
- Inventory Management

Data Explorer

- **Two Key Functions**
  - **Day Type Analysis**
    - Used for finding hourly averages for similar load profiles
    - For Compressed Air Assessment and other long-term analyses
    - Based on LogTool
  - **Data Visualization – easy graphing capabilities to explore large datasets**
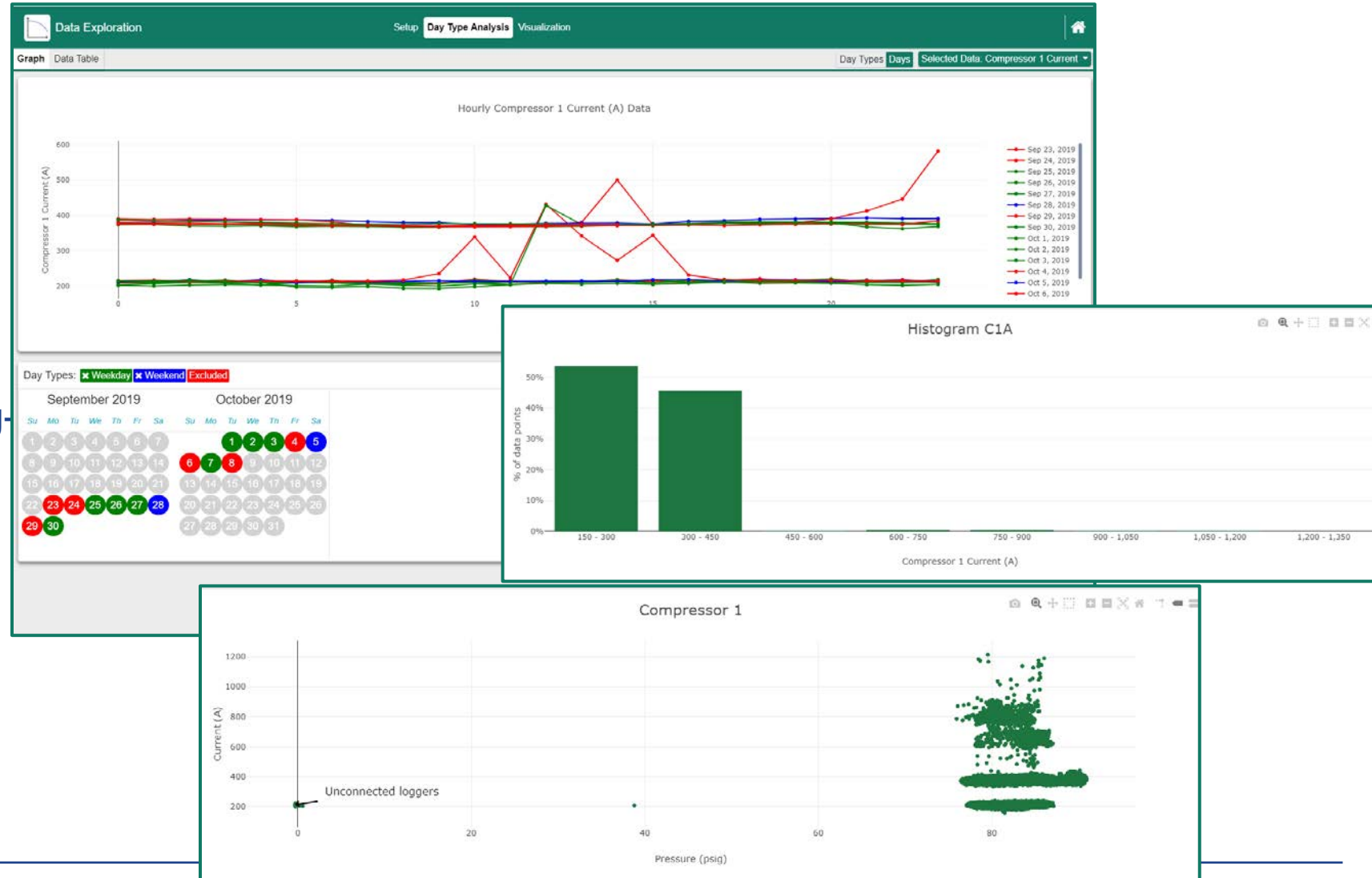
Equipment Inventories

- Modeled after MotorMaster

- Record key information about equipment in one place
  - Motors – Beta
  - Pumps, fans, compressors, maintenance - Planning

- Sort & filter, summary graphs, inventory printouts

- Batch analysis for simple calculators
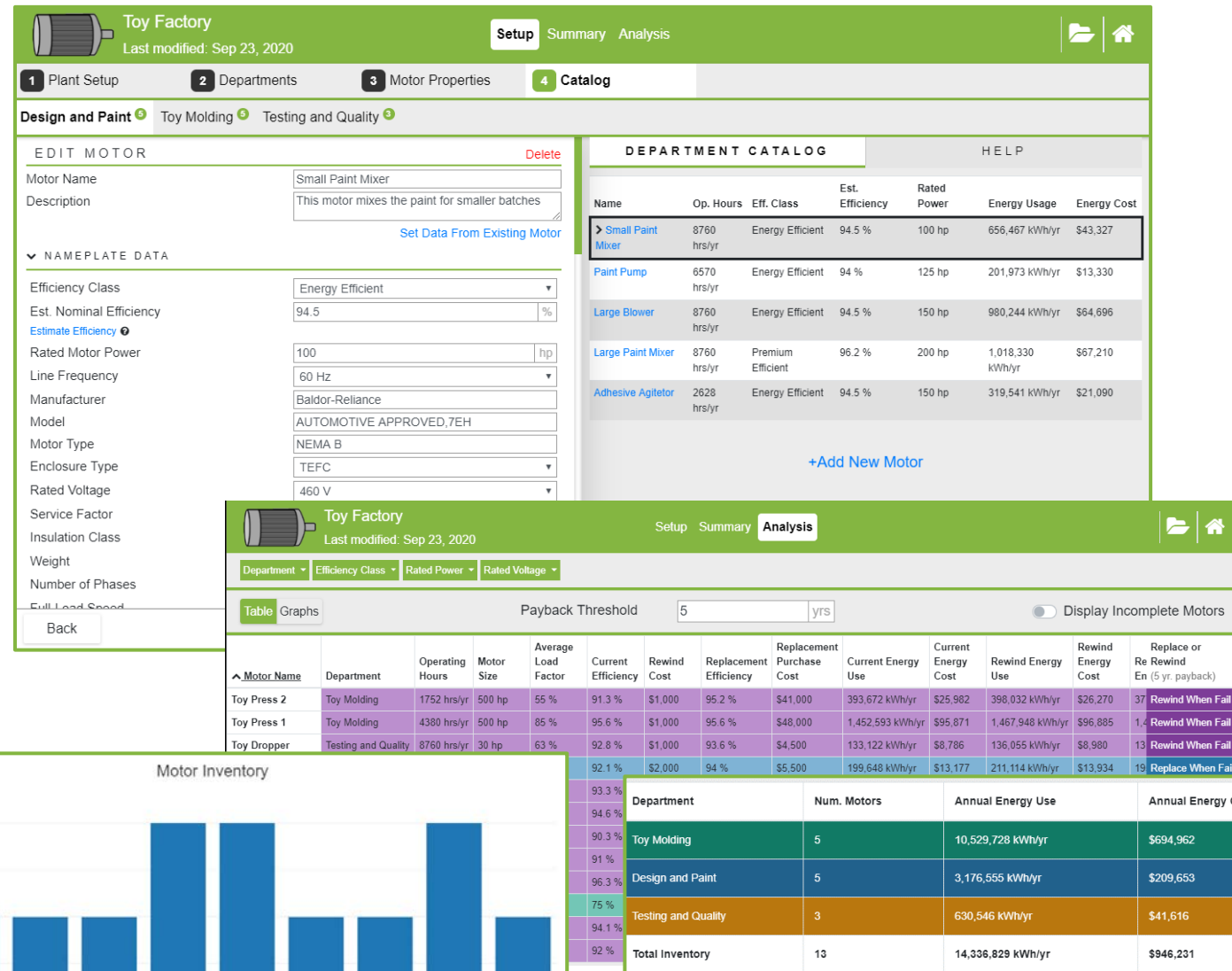
Coming Soon

- **Compressed Air Assessment**
  - Modeled after AirMaster+ with LogTool
  - Conduct Compressed Air Energy Assessment
  - Quantify Energy Savings Opportunities
- **More Equipment Databases**
  - Modeled after MotorMaster+ Database
  - Keep inventory of equipment (pumps, fans, compressors, etc.) connected to assessments

**Feedback or bugs?
Email:
armstrongko@ornl.gov
accawigk@ornl.gov
wenningtj@ornl.gov**