



MEASUR User Manual

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*This user manual covers MEASUR's dashboard, additional user manuals can be found inside of assessment modules.

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Overview

MEASUR can be used in a variety of ways to analyze and optimize your facilities' energy performance. You can conduct assessments of systems, track equipment inventory, and do quick calculations with over 70 different calculators. The dashboard is where all of those possibilities come together!

The screenshot displays the MEASUR dashboard, a web-based tool for energy efficiency and renewable energy management. The interface is divided into a left sidebar and a main content area.

Left Sidebar:

- U.S. DEPARTMENT OF ENERGY** logo and text: Energy Efficiency & Renewable Energy.
- Add New** button.
- Home** section:
 - All Assessments
 - Examples
 - Compressed Air Example
 - Toy Factory
 - Waste Water Example
 - Treasure Hunt Example
 - Steam Example
 - Pump Example
 - Fan Example
 - Process Heating - Fuel Example
- Data Exploration** section:
 - All Calculators
 - General
 - Compressed Air
 - Fans
 - Lighting
 - Motors
 - Process Cooling
 - Process Heating
 - Pumps
 - Steam
 - Wastewater
- Settings** section:
 - Custom Materials
 - Tutorials
 - About
 - Feedback
 - Acknowledgments
 - Translate
- Version: v1.0.0

Main Content Area:

- MEASUR** logo.
- Welcome message: "Welcome to the most efficient way to manage and optimize your facilities' systems and equipment."
- Instructions: "Create an assessment to model your system and find opportunities for efficiency or run calculations from one of our many property and equipment calculators. Get started with one of the following options."
- Top Action Buttons:**
 - View Assessments** (green folder icon)
 - Equipment Calculators** (green calculator icon)
- Assessment and Calculation Tiles:**
 - Pump Assessment** (blue pump icon)
 - Compressed Air Assessment** (purple compressor icon)
 - Process Heating Assessment** (orange flame icon)
 - Fan Assessment** (yellow fan icon)
 - Steam Assessment** (orange steam icon)
 - Treasure Hunt** (gold treasure chest icon)
 - Wastewater Assessment** (blue wastewater icon)
 - Motor Inventory** (green motor icon)
 - Data Exploration** (green graph icon)

Footer:

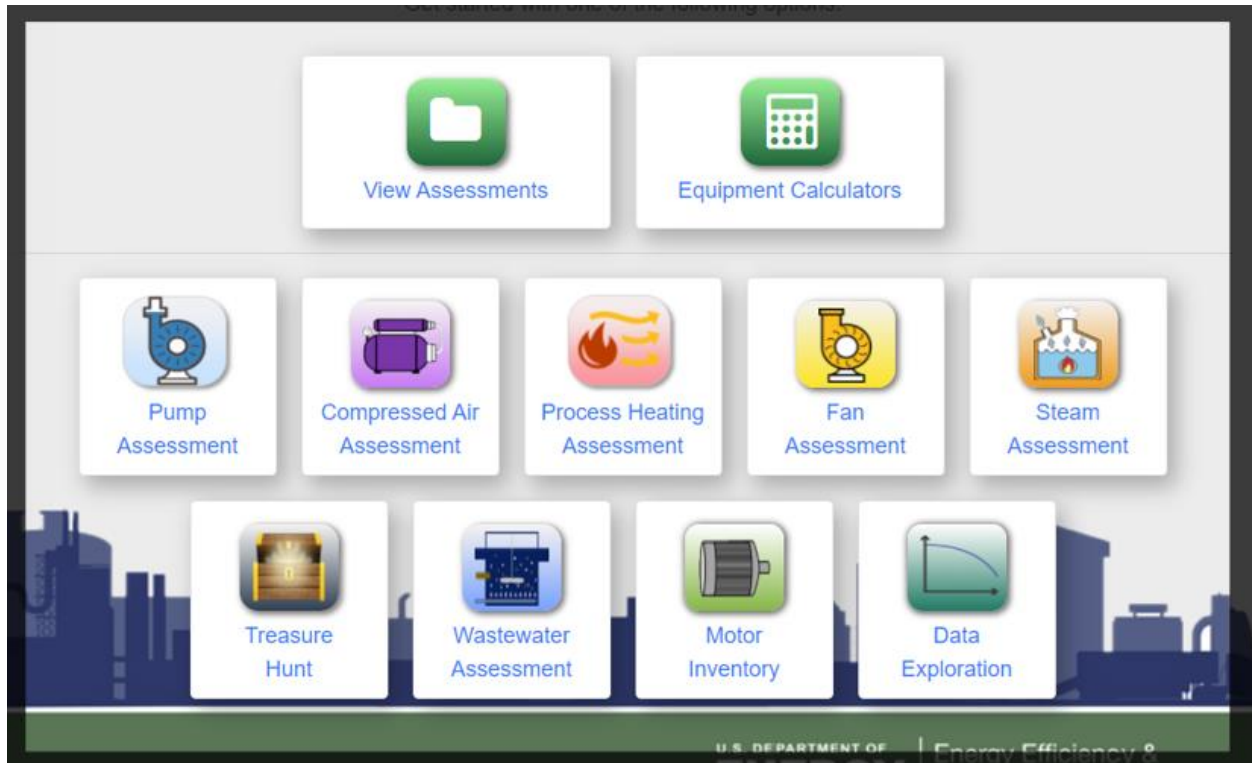
- U.S. DEPARTMENT OF ENERGY** logo and text: Energy Efficiency & Renewable Energy.

Navigation

There are two main ways to navigate around MEASUR's dashboard, using either the home screen or the sidebar.

Home Screen Links

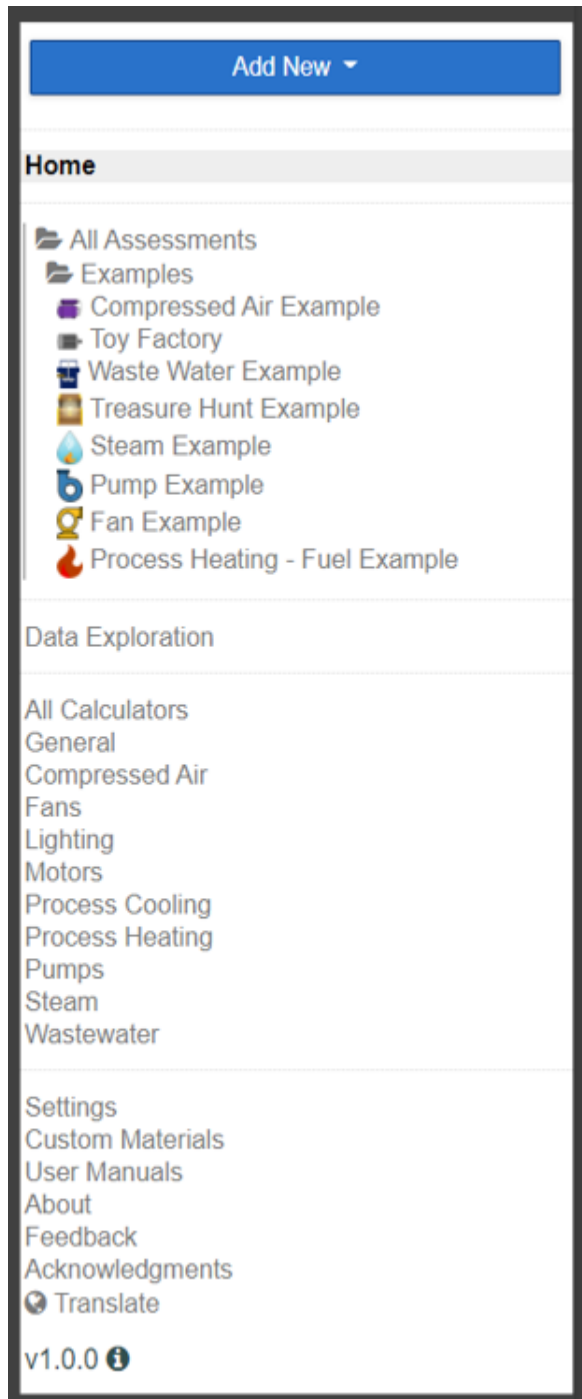
The home screen provides a series of cards with links to navigate to the MEASUR's core modules.



- View Assessments: Will take you to the “All Assessments” folder, where you can manage your existing assessments.
- Equipment Calculators: Will take you to the list of all the standalone calculators in MEASUR.
- ** Assessment: Will open the “Create Assessment” modal to name and start a new assessment.
- Motor Inventory: Will open the “Create Inventory” modal to create a new motor inventory.
- Data Exploration: Will take you to the “Data Exploration” module.

Sidebar

The sidebar can be used to get to all the different modules of MEASUR as well.



- "Add New" will give a dropdown with options to add a new assessment, inventory or folder.

- "Home" takes you to the dashboard seen above.

- Folders contain assessments that have been created.

- Clicking the folder name will take you to that folder dashboard.

- Clicking on the folder icon will collapse its contents.

- "Examples" provides a set of example assessments for each type of assessment in MEASUR.

- Clicking the assessment will take you directly to that assessment.

- "Data Exploration" will bring you to the corresponding module.

- "All Calculators" will bring you to a list of the 70+ calculators in MEASUR.

- The list of calculators can be viewed by their categories like "Compressed Air".

- Individual calculators will appear once you are inside of a category.

- "Settings" will bring to application wide default settings

- "Custom Materials" will bring you to a dashboard in which you can manage the database of materials that can be selected from in different assessments.

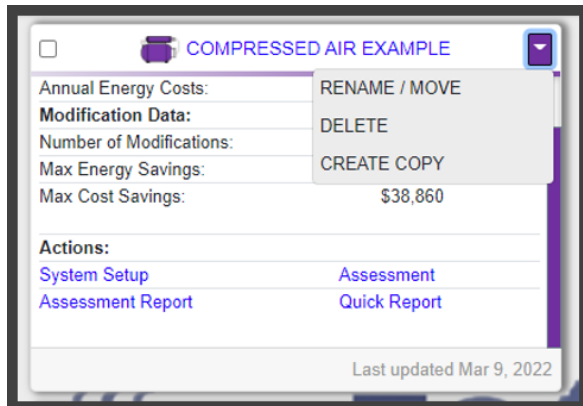
- "Translate" will provide a popup to translate the window content to different languages with google translate.

Assessment Folders

Assessments are created inside of folders, this allows for a place to house a set of assessments for a facility or organization. Rollups and summaries can be created using the content inside of a folder.

Assessment Cards

The default view for the assessments in a folder is a grid view with a different card representing each assessment. A summary of details will appear in the body of the card depending on the assessment type.

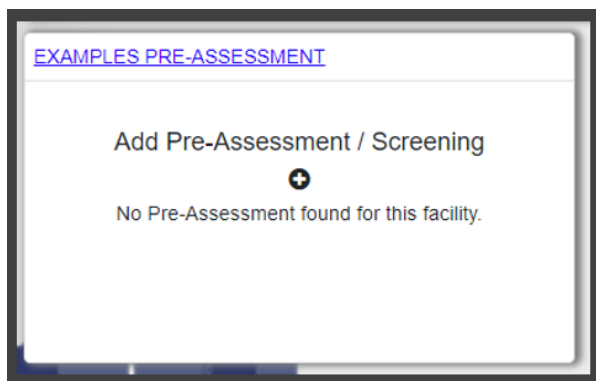


The dropdown on the top right provides a few options for editing the assessment.

Actions at the bottom of the card allow you to jump into the assessment at different places or view a quick pop up report.

The checkbox in the upper left hand corner is used to select the assessment when using the actions in the menu at the top of the folder, which we will cover next.

There will be a similar card for any sub-folders within the selected folder.



Create a "Pre-Assessment / Screening" to evaluate which equipment to focus your assessments on.

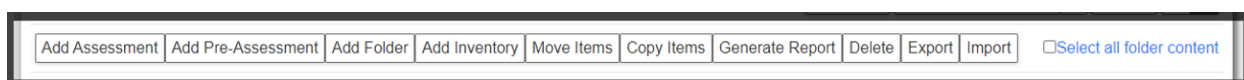
Folder Menu

The folder menu at the top of the folder will provide a way to manage the assessments in your folder as well as provide a summary and additional folder details.



The top section of the menu impacts the content shown in the folder.

- Use the breadcrumbs at the top left of the menu to navigate to parent folders.
- Use the action buttons on the top right of the menu to manage the display of assessment content.
- This user manual can be viewed at any time with the "Manual" button.



Use the middle action buttons to perform a variety of actions within the folder.

- Create assessments, pre-assessments, sub-folders and inventory items
- Copy, delete, export or generate a report of selected items
- Import folders and assessments that have been exported from MEASUR



Descriptive information can be added to the folder. This content will be added to any assessment report within this folder. Use the "Edit Info" link to make any changes to this information.

The screenshot shows the "EXAMPLES SUMMARY" table, which provides a breakdown of energy usage and costs for various types of assessments.

Type	Assessments	Annual Energy Used	Annual Energy Cost
Pumps	1	1,233.69 MWh	\$81,423.61
Process Heating	1	2,132,040 MMBtu	\$10,660,192.76
Fans	1	3,942.00 MWh	\$236,520.00
Steam	1	4,535,470 MMBtu	\$28,883,480.16
Wastewater	1	842.400 MWh	\$75,816.00
Compressed Air	1	2,266.51 MWh	\$179,399.05
Total	6	6,695,780 MMBtu	\$40,116,831.58

A summary of the baseline energy usage and costs for the assessments in the folder is provided.

Default settings for the content within this folder can be set using the "Edit Settings" link.

The screenshot shows the "EXAMPLES SETTINGS" table, which displays the default units of measure and costs for the assessments in the folder. An "Edit Settings" link is provided at the bottom.

EXAMPLES SETTINGS	
Units of Measure	Imperial
Fuel Cost	\$3.99 /MMBtu
Steam Cost	\$4.69 /MMBtu
Electricity Cost	\$0.066 /kWh

[Edit Settings](#)

Folder Report Rollup

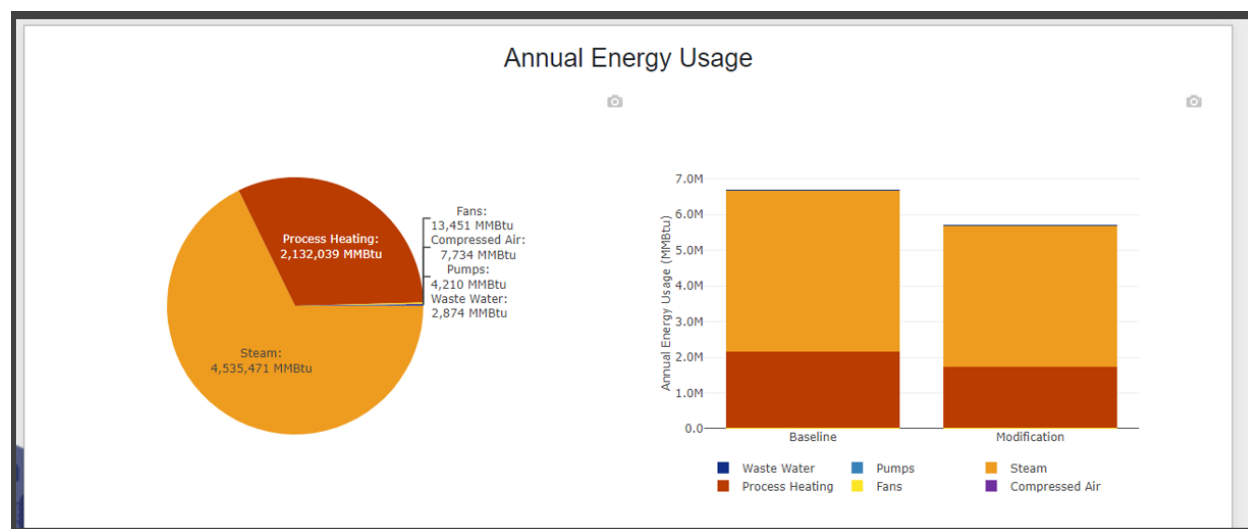
Using the “Generate Report” button as described above, a rollup report of the selected assessments will be created. The rollup report consists of all the reports corresponding to the selected assessments, as well as, tables and graphs generated to compare the energy consumption and costs.

Use the buttons in the top right hand corner to select the common units you want to use for comparisons, and to generate a printable PDF file.

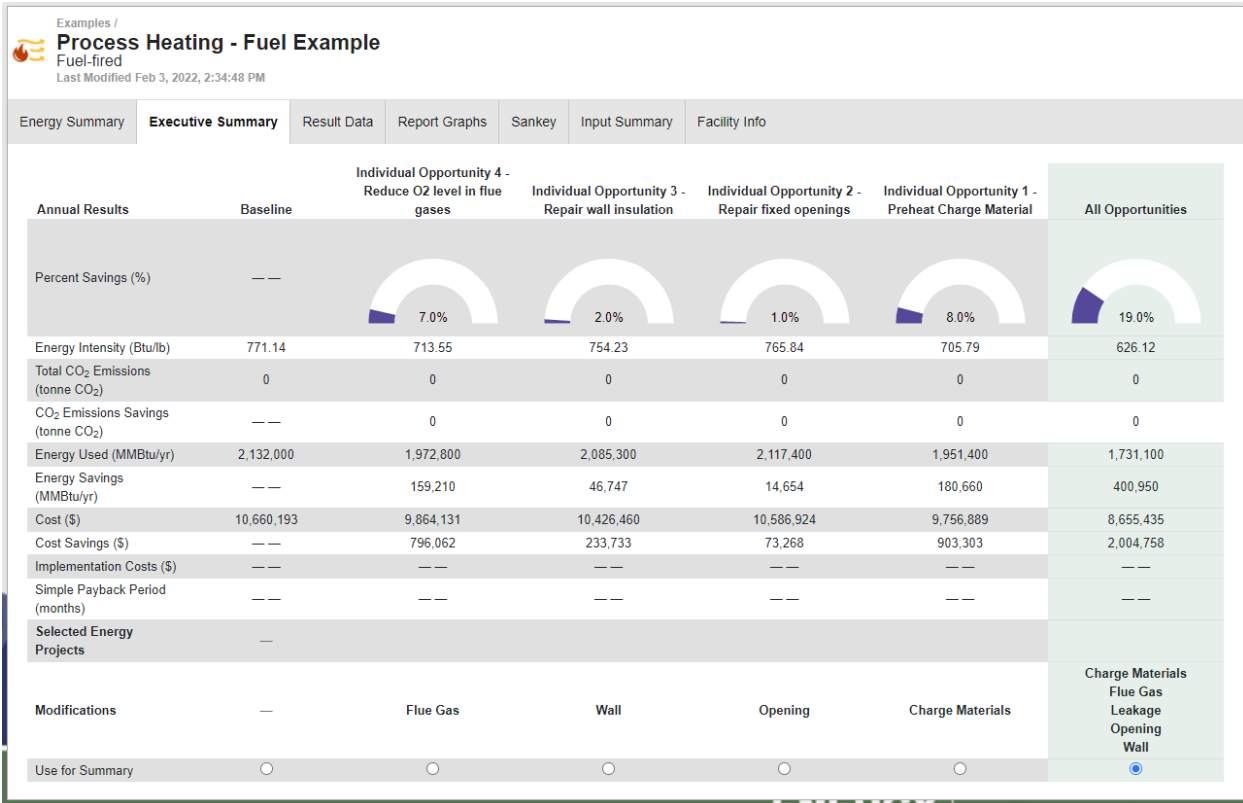
MEASUR Summary Report														Units	Print	Close Report
Pumps		Furnaces		Fans		Steam		Treasure Hunt		Wastewater		Compressed Air				
Maximum Annual Cost Savings	Maximum Annual Energy Savings	Maximum Annual Cost Savings	Maximum Annual Energy Savings	Maximum Annual Cost Savings	Maximum Annual Energy Savings	Maximum Annual Cost Savings	Maximum Annual Energy Savings	Annual Cost Savings	Annual Cost	Maximum Annual Cost Savings	Maximum Annual Energy Savings	Maximum Annual Cost Savings	Maximum Annual Energy Savings			
-\$51,782	-785 MWh	\$2,004,758	400,952 MMBtu	\$48,334	806 MWh	\$3,286,521	583,098 MMBtu	\$180,327	\$2,019,673	\$25,272	281 MWh	\$38,860	528 MWh			
Annual Cost	Annual Energy	Annual Cost	Annual Energy	Annual Cost	Annual Energy	Annual Cost	Annual Energy			Annual Cost	Annual Energy	Annual Cost	Annual Energy			
\$133,206	2,018 MWh	\$8,655,435	1,731,087 MMBtu	\$188,186	3,136 MWh	\$25,596,959	3,952,373 MMBtu			\$50,544	562 MWh	\$140,539	1,739 MWh			
Click for details		Click for details		Click for details		Click for details		Click for details		Click for details		Click for details				
														- Collapse Summaries		

[- Collapse Summaries](#)

The top portion of the summary report groups together assessments of the same types for comparisons. The cards at the top give a quick look at savings from selected modifications. Click on the cards to view the comparisons in greater detail.



The body of the report will have individual assessment reports. However, the first item will be a comparison of the annual energy consumption, cost and emissions of each utility type.



Each assessment report will have a section that list the modifications and their savings. It will also have a “Use for Summary” selection button that will select which modification from each assessment should be used when calculating potential savings.

Application Settings

Clicking the “Settings” link in the sidebar will bring you to the a screen that can be used to select the default settings for the application. The “All Assessments” folder and any content created inside of this folder will inherit these settings (unless sub-folders settings are changed). Standalone calculators will also use these settings.

Choose units of measure and set unit costs for utilities. Set default units for different assessment types and set default print content for report printing.

The screenshot displays the 'General Settings' page of an application. At the top right, there are icons for a menu and a home button. The main heading is 'General Settings' with a dropdown arrow. Below it, a note states: 'These will be default settings for any new assessments and folders.'

The settings are organized into sections:

- Language:** A link to 'Translate Application Using Google Translate'.
- Currency:** A dropdown menu showing '\$'.
- Units of Measure:** Radio buttons for 'Imperial' and 'Metric' (selected).
- Energy Result Unit:** A dropdown menu showing 'Gigajoules (GJ)'.
- Default Panel Tab:** Radio buttons for 'Results' (selected) and 'Help'.
- Energy Costs for Operation:** A table with utility names, input fields for costs, and unit dropdowns.

Utility	Cost	Unit
Fuel	3.99	\$/GJ
Steam (as utility)	4.69	\$/tonne
Electricity	0.066	\$/kWh
Compressed Air (as utility)	0.022	\$/m ³
Other Fuel	0	\$/MJ
Water	0	\$/L
Wastewater	0	\$/L

Below the table are several expandable sections, each with a title and an upward-pointing arrow:

- CO₂ Savings Settings
- Pump Settings
- Process Heating Settings
- Fan Settings
- Steam Settings
- Tutorial Settings
- Print Settings

Custom Materials

Use the “Custom Materials” link in the sidebar to navigate to a page that allows you to create and manage a database of custom materials that can be used in a process heating assessment. Materials can be exported and imported into MEASUR, so you can export your custom materials and send them to your colleagues!

The screenshot shows the 'Custom Materials Management' page. At the top, there are buttons for 'Delete', 'Export', and 'Import', along with a checkbox for 'Select all folder content'. Below this is a section titled 'Custom Gaseous Fuels' with a '+Add Custom Gaseous Fuel' link. A modal window titled 'CUSTOM GAS' is open, displaying a table of chemical components and their percentages. The table includes: C₂H₆: 5.20 %, C₃H₈: 0.00 %, C₄H₁₀CnH_{2n}: 0.00 %, CH₄: 33.9 %, CO: 6.10 %, CO₂: 2.60 %, H₂: 47.9 %, H₂O: 0.00 %, N₂: 3.70 %, and O₂: 0.600 %. A 'Delete Material' button is at the bottom right of the modal.

CUSTOM GAS	
C ₂ H ₆ :	5.20 %
C ₃ H ₈ :	0.00 %
C ₄ H ₁₀ CnH _{2n} :	0.00 %
CH ₄ :	33.9 %
CO:	6.10 %
CO ₂ :	2.60 %
H ₂ :	47.9 %
H ₂ O:	0.00 %
N ₂ :	3.70 %
O ₂ :	0.600 %

Custom materials will show up in the dropdowns in loss calculators that are used to set properties for a loss. The “Add New Fuel” link will open a modal to add a custom material to the database, these will also appear in the “Custom Materials Management” page.

The screenshot shows the 'Heat Balance' section of the MEASUR software. The 'Flue Gas' tab is selected. Under the 'BASELINE' section, the 'Loss #1' is expanded. The 'Type of fuel' is set to 'Gas'. The 'Fuel' dropdown menu is open, showing options: 'Custom Gas', 'Typical Natural Gas - US', 'Coke Oven Gas', 'Blast Furnace Gas', and 'Custom Gas' (highlighted). The 'Flue Gas Temperature', 'Ambient Air Temperature', and 'Percent Oxygen Or Excess Air?' fields are empty. The 'Oxygen In Flue Gas' field is set to '6 %'.

BASELINE	
Loss #1	
Type of fuel	Gas
Fuel	Custom Gas
Flue Gas Temperature	
Ambient Air Temperature	
Percent Oxygen Or Excess Air?	
Oxygen In Flue Gas	6 %