

ADDING PUMP MEASUREMENTS

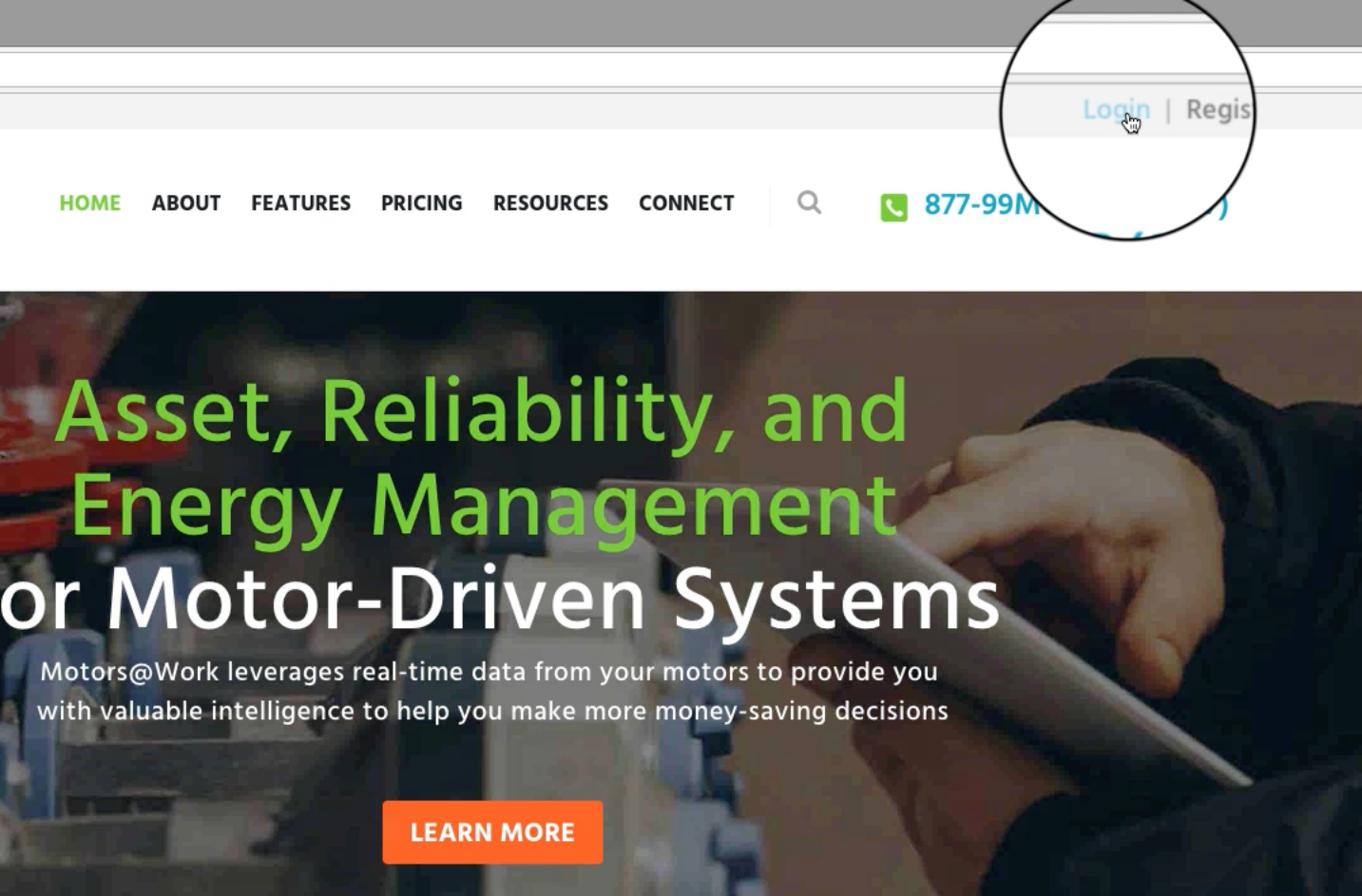
A QUICK-START GUIDE



MOTORS@WORK



LOG INTO MOTORS@WORK



1. Open your browser & go to www.motorsatwork.com
2. Select [Login](#) in the upper right corner of the website

ASSET, RELIABILITY AND ENERGY MANAGEMENT FOR MOTOR-DRIVEN SYSTEMS

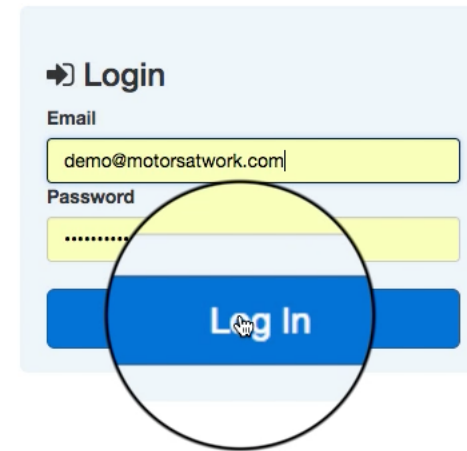


Reliability Management



Energy Management

3. Enter your **Email** and **Password** in the appropriate fields
4. Click the **Log In** button

A screenshot of a web application's login interface. It features a light blue background with the heading "Login" and a right-pointing arrow. Below the heading are two input fields: "Email" containing "demo@motorsatwork.com" and "Password" containing a masked password ".....". A blue "Log In" button is positioned below the fields, with a mouse cursor hovering over it. A black circle highlights the "Log In" button.



ADD MEASUREMENT (SHORTCUT)

Motors@Work - Efficiency for ...

Secure https://app.motorsatwork.com/dashboard

Search criteria

Mayberry Waterworks Overview

Asset Management Reliability Management Energy Management

Asset Performance

Energy Opportunities Total, all facilities

Asset	Score	Payback period	Cost to replace
CALVANDER PS PU	96.57 ✔	0.04 years	\$1,474.85
Yemassee Test M	N/A	0.2 years	\$3,082.30
BLOWER BLD #1 A	N/A	0.21 years	\$6,148.35
-NA-	N/A	0.21 years	\$3,082.30
#2	N/A	0.35 years	\$2,573.35
...		< 2 years	

Total, payback under 2.00 years **\$ 331439.55**

Reliability Opportunities Total, all facilities

Asset	Score	Life remaining	Cost to replace
Yemassee Test M	N/A	0 years	\$3,082.30
2 Water Pump Mo	2.6 ⚠	0 years	\$9,285.90
CALVANDER PS PU	2.6 ⚠	0 years	\$1,474.85
BLOWER BLD #1 A	2.6 ⚠	0 years	\$6,148.35
CALVANDER PS PU	2.6 ⚠	0 years	\$1,526.20
...			

Total, less than 5 years remaining life **\$21517.6**

Notifications

New, asset only

- ⚠ New measurement shows, BLOWER BLD #1 AIR COMPRESSOR MOTOR: Operating Temperature Exceeds Maximum Measured: 70.00. over the maximum.
[Review BLOWER BLD #1 AIR COMPRESSOR MOTOR Measurements](#)
- ⚠ New measurement shows, BLOWER BLD #1 AIR COMPRESSOR MOTOR: Ambient Temperature High Measured: 0.00. under the maximum.
[Review BLOWER BLD #1 AIR COMPRESSOR MOTOR Measurements](#)
- ⚠ New measurement shows, BLOWER BLD #1 AIR COMPRESSOR MOTOR: [HIGH] Motor Load exceeds service factor: 159.46
[Review BLOWER BLD #1 AIR COMPRESSOR MOTOR Measurements](#)

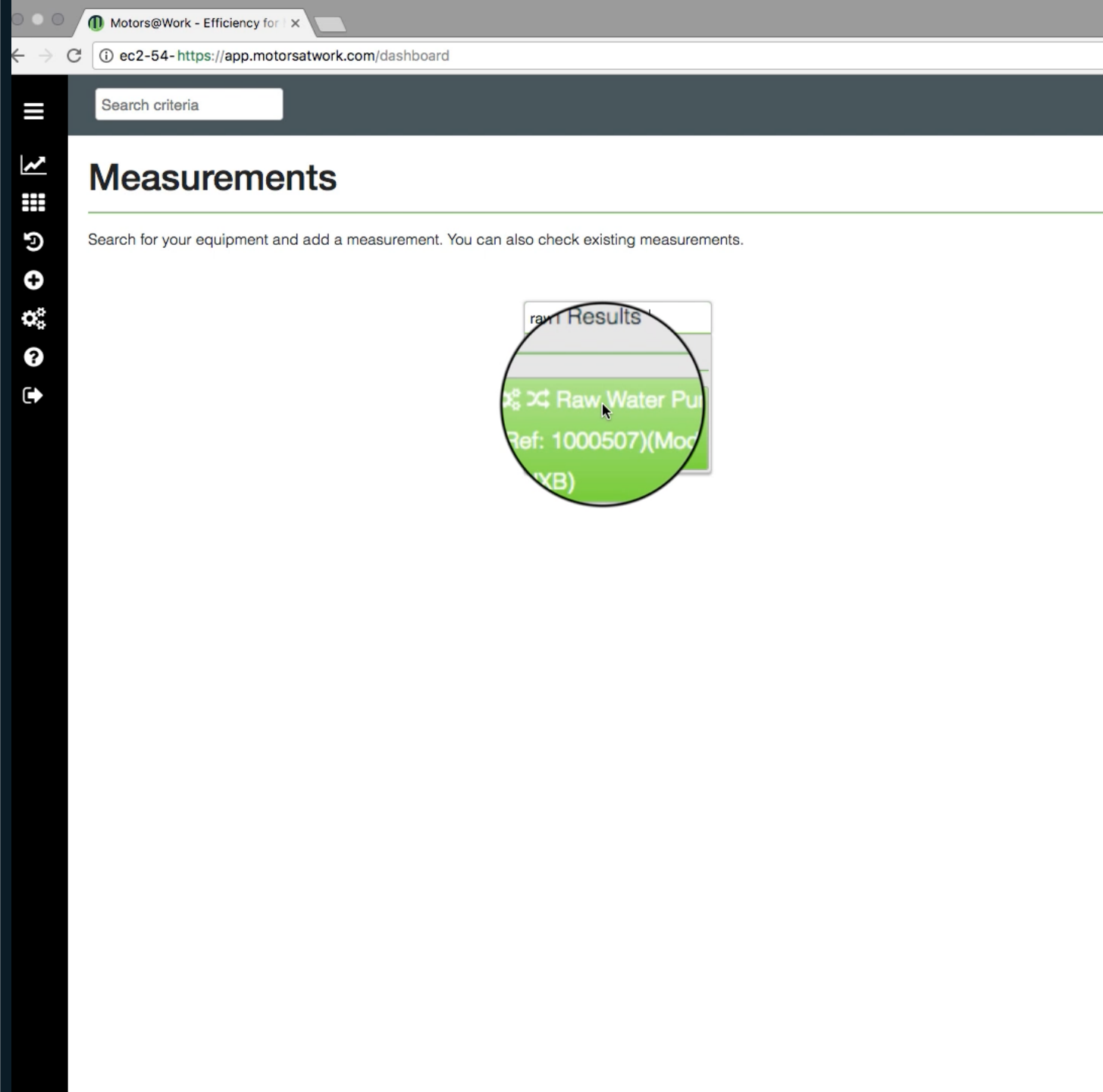
My KPIs

Total, all facilities

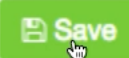

Metric	July 2017	Previous 12 months
Average age of assets	15.26 years	
Depreciation ratio	0 %	
Energy Performance	1523.72 kWh/mg	
Total utility bill	\$ 240439.62	
Equipment effectiveness	0 %	
Replacement needed	\$ 331439.55	

1. Select the **+** [Measurement icon] from the navigation bar

2. Search for the name of the pump you're measuring and select it from the list of suggested assets



rk.com

Motor Measurement

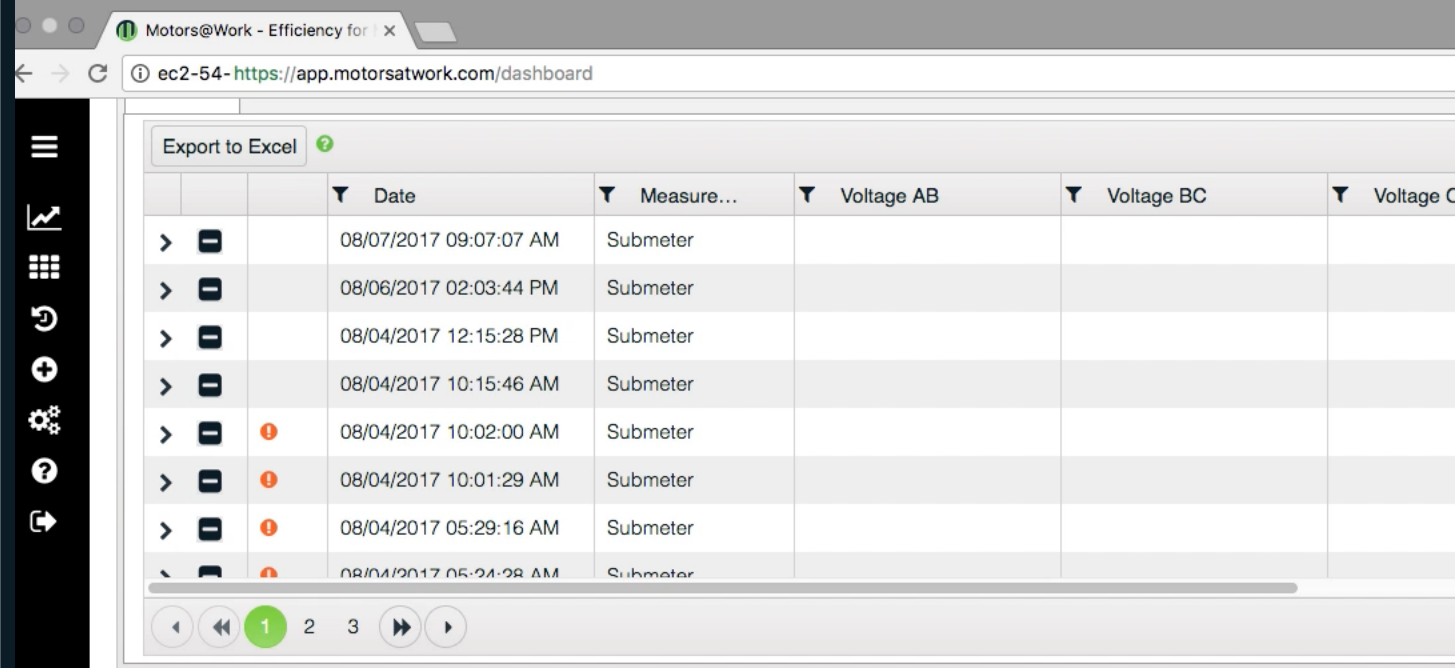
Measurement Date *:	Measured Speed (RPM):
<input type="text" value="08/07/2017 09:07:07 AM"/>	<input type="text"/>
Measurement Type:	Power Draw (kW):
<input type="text" value="Submeter"/>	<input type="text" value="627.00"/>
Voltage AB:	THD (%):
<input type="text"/>	<input type="text"/>
Voltage BC:	Insulation Resistance (MegOhms):
<input type="text"/>	<input type="text"/>
Voltage CA:	Vibration (in/sec):
<input type="text"/>	<input type="text"/>
Current A:	Surge/Motor Circuit (%):
<input type="text"/>	<input type="text"/>
Current B:	Motor Temperature:
<input type="text"/>	<input type="text"/>
Current C:	Ambient Temperature:
<input type="text"/>	<input type="text"/>
Power Factor (%):	
<input type="text"/>	

Pump Measurement

Measurement Date *:
<input type="text" value="08/07/2017 09:07:07 AM"/>
Static Suction Head(Feet of Head) *:
<input type="text" value="16.00"/>
Static Discharge Head (Feet of Head) *:
<input type="text" value="145.00"/>
Pump Discharge Flow Rate (MGD) *:
<input type="text" value="9.67"/>
Pump Discharge Pressure (PSI) *:
<input type="text" value="61.5"/>
Fluid Density (lb/ft3) *:
<input type="text" value="62.42"/>
Clearwell Level(Feet):
<input type="text"/>

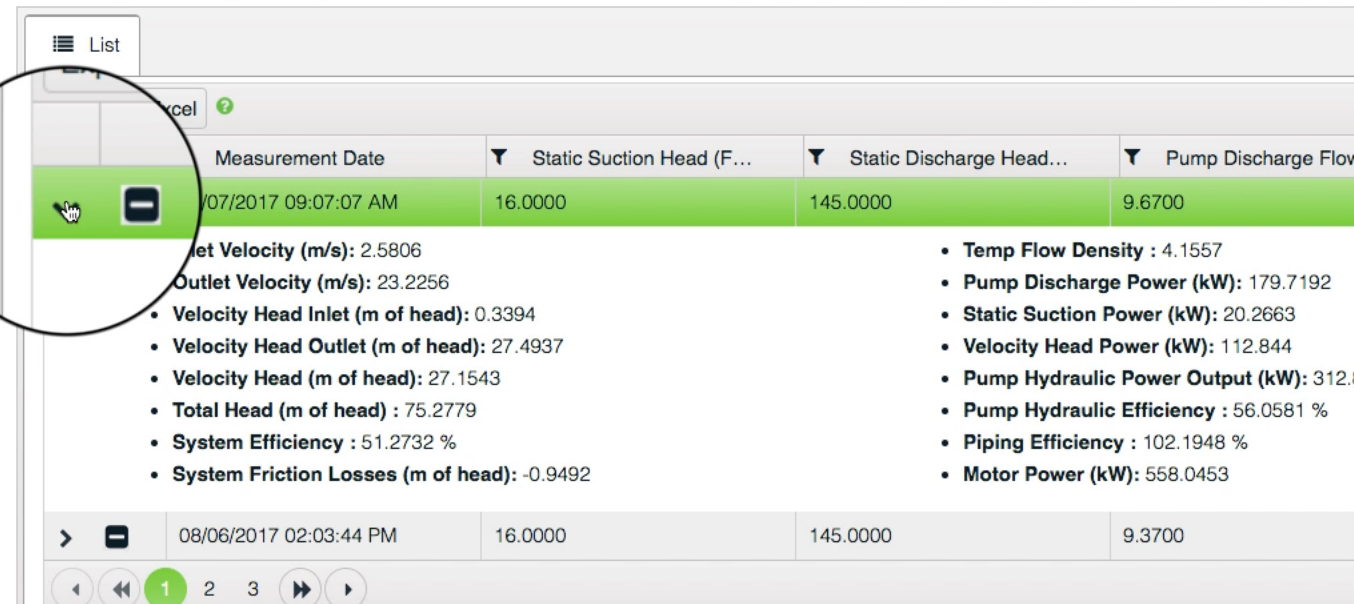
3. Enter your measurements; to calculate pump load and efficiency, enter, at a minimum, **Power draw (kW)** or three phases' **Current & Voltage** for the motor plus the pump's **Flow rate (mgd) & Pressure (psi)**
4. Click **Update** to create the measurement record

5. Click the > [caret] to expand your measurement and see Motors@Work's analysis
6. If present, hover over the ! [Warning icon] to read your notifications



		Date	Measure...	Voltage AB	Voltage BC	Voltage C
>	[-]	08/07/2017 09:07:07 AM	Submeter			
>	[-]	08/06/2017 02:03:44 PM	Submeter			
>	[-]	08/04/2017 12:15:28 PM	Submeter			
>	[-]	08/04/2017 10:15:46 AM	Submeter			
>	[-]	08/04/2017 10:02:00 AM	Submeter			
>	[-]	08/04/2017 10:01:29 AM	Submeter			
>	[-]	08/04/2017 05:29:16 AM	Submeter			
>	[-]	08/04/2017 05:24:28 AM	Submeter			

Pump Measurement



	Measurement Date	Static Suction Head (F...	Static Discharge Head...	Pump Discharge Flow
>	08/07/2017 09:07:07 AM	16.0000	145.0000	9.6700
>	08/06/2017 02:03:44 PM	16.0000	145.0000	9.3700

- Inlet Velocity (m/s): 2.5806
- Outlet Velocity (m/s): 23.2256
- Velocity Head Inlet (m of head): 0.3394
- Velocity Head Outlet (m of head): 27.4937
- Velocity Head (m of head): 27.1543
- Total Head (m of head): 75.2779
- System Efficiency : 51.2732 %
- System Friction Losses (m of head): -0.9492
- Temp Flow Density : 4.1557
- Pump Discharge Power (kW): 179.7192
- Static Suction Power (kW): 20.2663
- Velocity Head Power (kW): 112.844
- Pump Hydraulic Power Output (kW): 312.4
- Pump Hydraulic Efficiency : 56.0581 %
- Piping Efficiency : 102.1948 %
- Motor Power (kW): 558.0453



ADD MEASUREMENT TO MOTOR RECORD

Motors@Work - Efficiency for X

ec2-54- https://app.motorsatwork.com/dashboard

Search criteria

Yberry Waterworks Overview

Asset Management Reliability Management Energy Management

Asset Performance

Energy Opportunities Total, all facilities

Asset	Score	Payback period	Cost to replace
CALVANDER PS PU	96.57	0.04 years	\$1,474.85
Yemassee Test M	N/A	0.2 years	\$3,082.30
-NA-	N/A	0.21 years	\$3,082.30
#2	N/A	0.35 years	\$2,573.35
MOTOR - 10947 -	N/A	0.83 years	\$2,115.75
...		< 2 years	

Total, payback under 2.00 years **\$ 328544.45**

Reliability Opportunities Total, all facilities

Asset	Score	Life remaining	Cost to replace
Yemassee Test M	N/A	0 years	\$3,082.30
2 Water Pump Mo	2.6	0 years	\$9,285.90
CALVANDER PS PU	2.6	0 years	\$1,474.85
CALVANDER PS PU	2.6	0 years	\$1,526.20
...			

Total, less than 5 years remaining life **\$15369.25**

Notifications

New, asset only

- New measurement shows, #2: [HIGH] Motor Load exceeds service factor: 652.50
[Review #2 Measurements](#)
- New measurement shows, Finished Water MOTOR - 10116 - RSL PUMP MOTOR #1, 50-RSLM-1: [HIGH] Motor Load exceeds service factor: 135.21
[Review Finished Water MOTOR - 10116 - RSL PUMP MOTOR #1, 50-RSLM-1 Measurements](#)
- New measurement shows, Finished Water MOTOR - 10116 - RSL PUMP MOTOR #1, 50-RSLM-1: Motor operating at sub-optimal motor load. Measured: 15.91

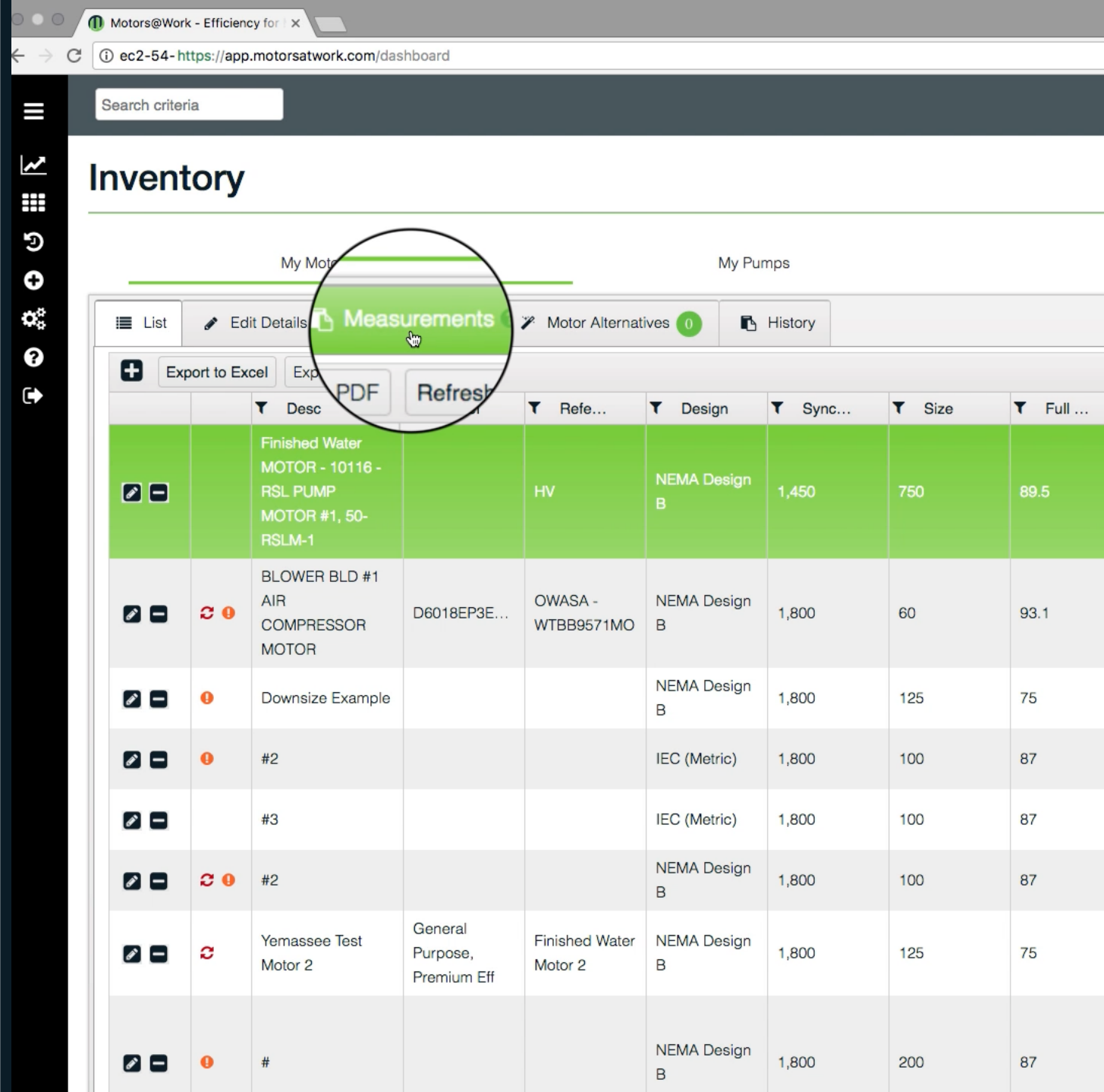
My KPIs

Total, all facilities

Metric	July 2017	Previous 12 months
Average age of assets	15.26 years	
Depreciation ratio	0 %	
Energy Performance	1523.72 kWh/mg	
Total utility bill	\$ 240439.62	
Equipment effectiveness	0 %	
Replacement needed	\$ 328544.45	

1. Click the [Inventory icon] in the left navigation bar
2. By default, you'll land on the **My Motors** screen

3. Select the name of the motor attached to the pump you're measuring
4. Click on the **Measurements** tab



The screenshot shows the Motors@Work web application dashboard. The browser address bar displays "ec2-54-https://app.motorsatwork.com/dashboard". The page title is "Inventory". A search criteria input field is visible at the top. The main content area features a table with columns: Desc, Refer..., Design, Sync..., Size, and Full ... The table contains several rows of motor data. A red circle highlights the "Measurements" tab in the top navigation bar, which is currently selected. The table data is as follows:

	Desc	Refer...	Design	Sync...	Size	Full ...
	Finished Water MOTOR - 10116 - RSL PUMP MOTOR #1, 50-RSLM-1	HV	NEMA Design B	1,450	750	89.5
	BLOWER BLD #1 AIR COMPRESSOR MOTOR	D6018EP3E...	OWASA - WTBB9571MO	1,800	60	93.1
	Downsize Example		NEMA Design B	1,800	125	75
	#2		IEC (Metric)	1,800	100	87
	#3		IEC (Metric)	1,800	100	87
	#2		NEMA Design B	1,800	100	87
	Yemassee Test Motor 2	General Purpose, Premium Eff	Finished Water Motor 2	1,800	125	75
	#		NEMA Design B	1,800	200	87

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ec2-54- https://app.motorsatwork.com/dashboard









Search criteria

Inventory

My Motors ? My Pumps

Edit Details Measurements ? Motor Alternatives 0 History

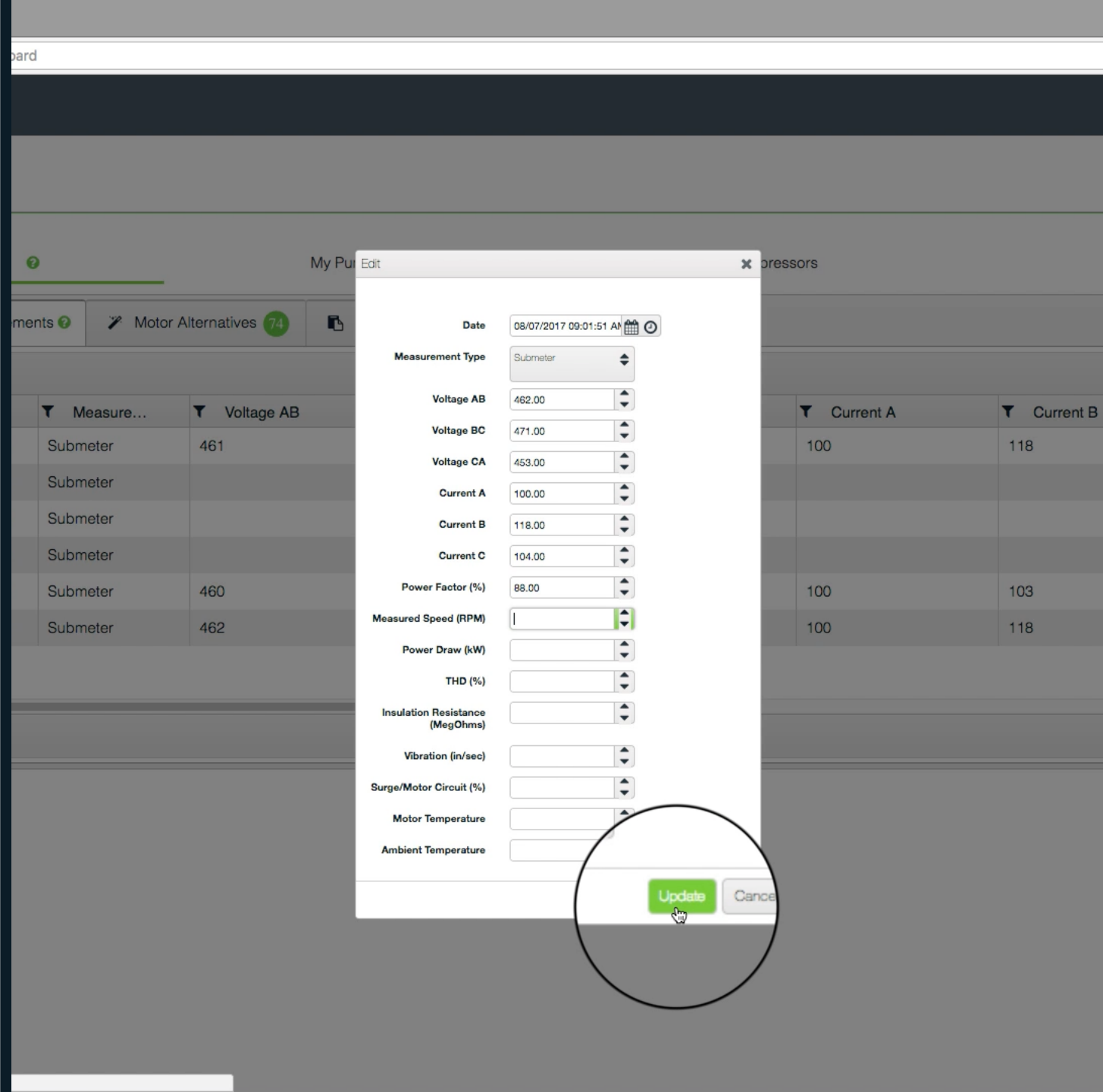
 Exit to Excel

		Date	Measure...	Voltage AB	Voltage BC	Voltage
>		08/07/2017 09:07:07 AM	Submeter			
>		08/06/2017 02:03:44 PM	Submeter			
>		08/04/2017 12:15:28 PM	Submeter			
>		08/04/2017 10:15:46 AM	Submeter			
>		08/04/2017 10:02:00 AM	Submeter			
>		08/04/2017 10:01:29 AM	Submeter			
>		08/04/2017 05:29:16 AM	Submeter			
>		08/04/2017 05:04:00 AM	Submeter			

1 2 3

- To add a new measurement, click the  [Add icon]

6. Enter your measurements; to calculate pump load and efficiency, enter, at a minimum, **Power draw (kW)** or three phases' **Current & Voltage** on the motor
7. Click **Update** to create the motor measurement record



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Search criteria

Inventory

My Motors ? **MyPumps**

List Edit Details Measurements ? Motor Alternatives

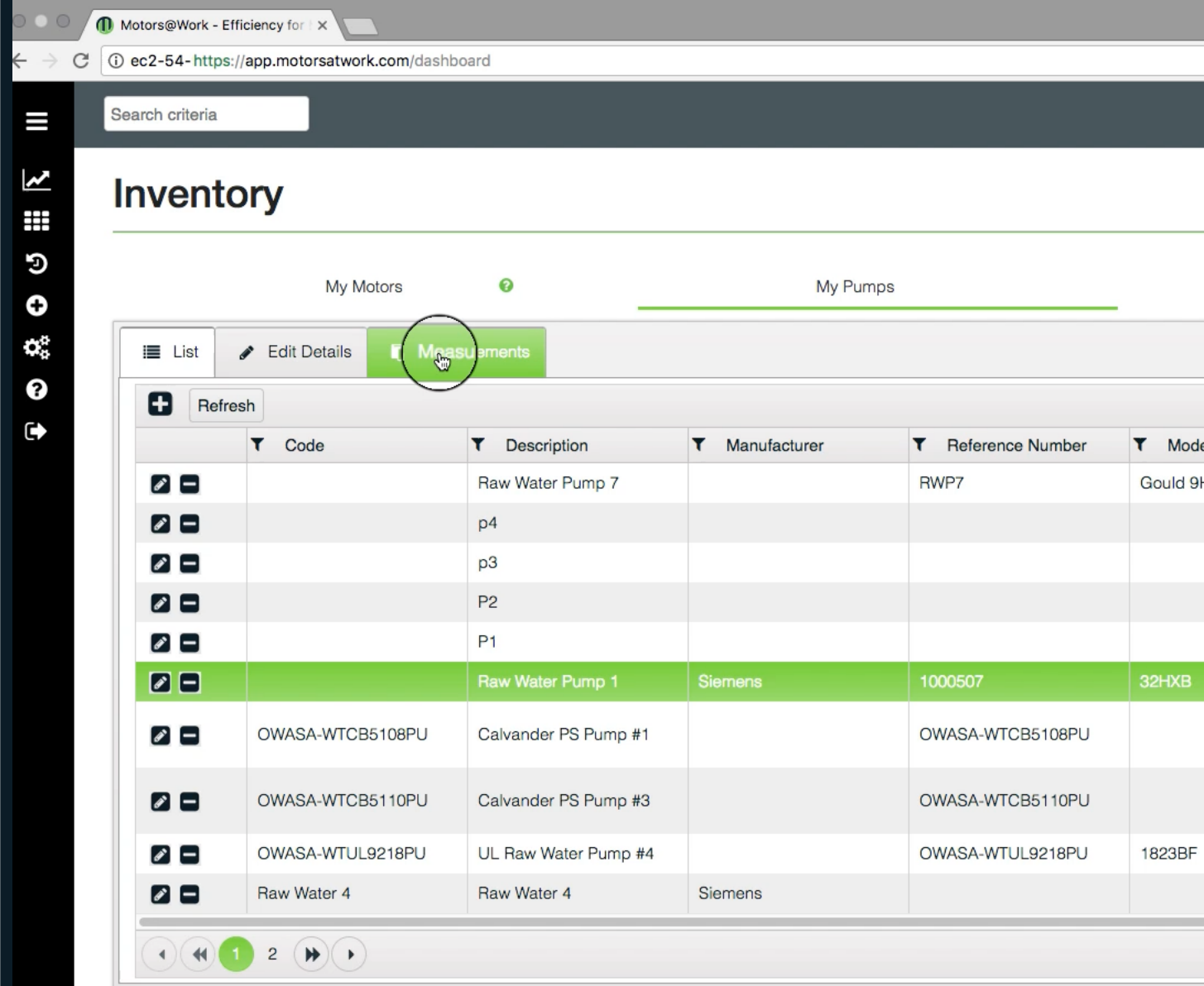
+ Export to Excel

			Date	Measure...	Voltage AB	Voltage BC	Voltage
>	🔊	!	08/07/2017 09:09:33 AM	Submeter			
>	🔊		08/07/2017 09:07:07 AM	Submeter			
>	🔊		08/06/2017 02:03:44 PM	Submeter			
>	🔊		08/04/2017 12:15:28 PM	Submeter			
>	🔊		08/04/2017 10:15:46 AM	Submeter			
>	🔊	!	08/04/2017 10:02:00 AM	Submeter			
>	🔊	!	08/04/2017 10:01:29 AM	Submeter			
>	🔊	!	08/04/2017 09:00:10 AM	Submeter			





















1 2 3

8. Click My Pumps

9. Select the name of the pump you're measuring
10. Click on the **Measurements** tab



The screenshot shows a web browser window with the URL `https://app.motorsatwork.com/dashboard`. The page title is "Inventory". There are two tabs: "My Motors" and "My Pumps". The "My Pumps" tab is active. Below the tabs, there are three buttons: "List", "Edit Details", and "Measurements". The "Measurements" button is highlighted with a green circle and a mouse cursor. Below the buttons is a table with the following columns: Code, Description, Manufacturer, Reference Number, and Model. The table contains several rows of pump data. The row for "Raw Water Pump 1" is highlighted in green.

	Code	Description	Manufacturer	Reference Number	Model
 		Raw Water Pump 7		RWP7	Gould 9R
 		p4			
 		p3			
 		P2			
 		P1			
 		Raw Water Pump 1	Siemens	1000507	32-HXB
 	OWASA-WTCB5108PU	Calvander PS Pump #1		OWASA-WTCB5108PU	
 	OWASA-WTCB5110PU	Calvander PS Pump #3		OWASA-WTCB5110PU	
 	OWASA-WTUL9218PU	UL Raw Water Pump #4		OWASA-WTUL9218PU	1823BF
 	Raw Water 4	Raw Water 4	Siemens		

Motors@Work - Efficiency for ...

ec2-54- https://app.motorsatwork.com/dashboard

Search criteria

Inventory

My Motors ? My Pumps

List Edit Details Measurements

ExpExcel ?

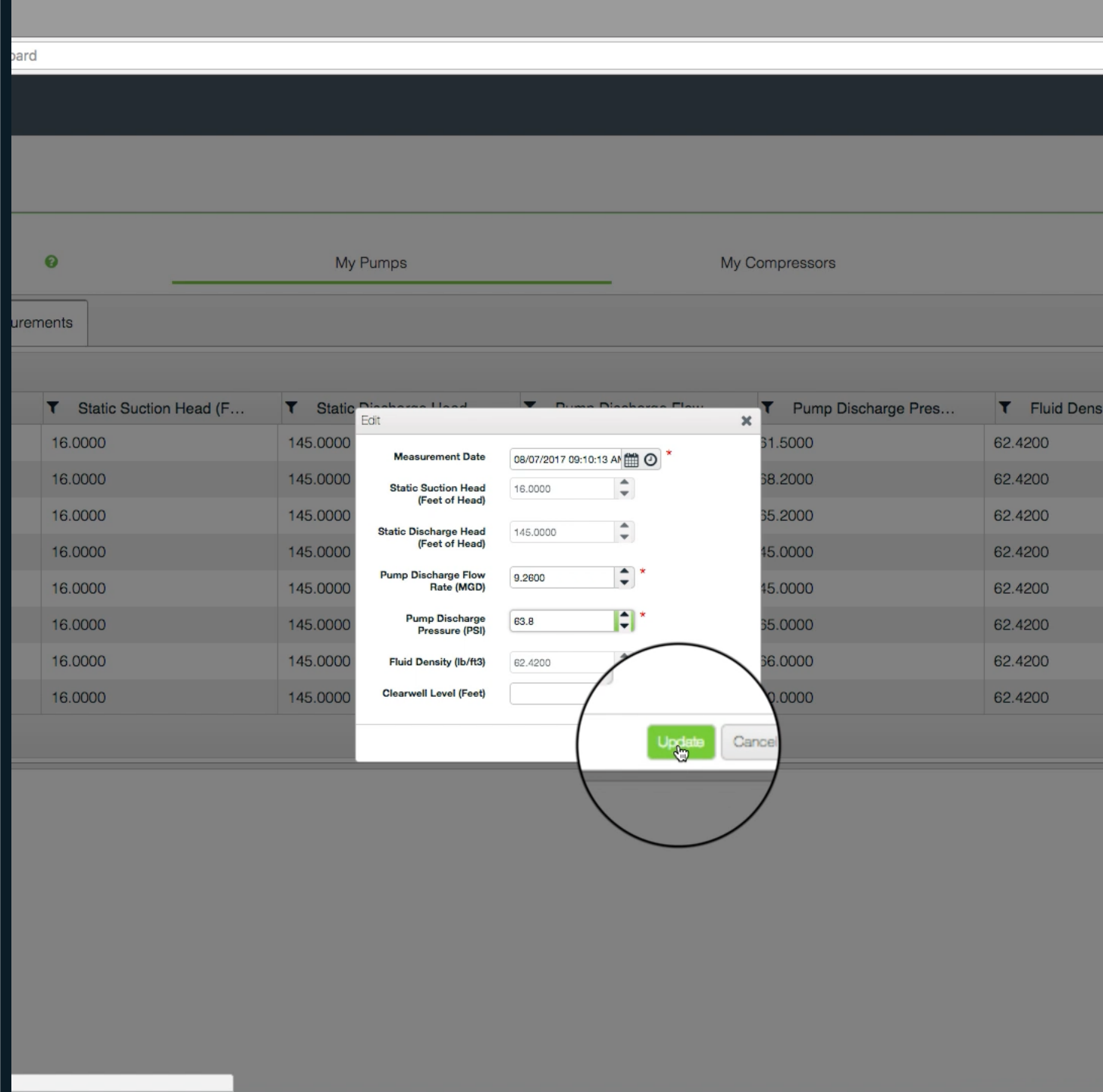
	Measurement Date	Static Suction Head (F...	Static Discharge Head...	Pump Discharge P...
	08/07/2017 09:07:07 AM	16.0000	145.0000	9.6700
>	08/06/2017 02:03:44 PM	16.0000	145.0000	9.3700
>	08/04/2017 12:15:28 PM	16.0000	145.0000	9.5800
>	08/04/2017 10:15:46 AM	16.0000	145.0000	8.0000
>	08/04/2017 10:02:00 AM	16.0000	145.0000	45.0000
>	08/04/2017 10:01:29 AM	16.0000	145.0000	10.0000
>	08/04/2017 09:56:47 AM	16.0000	145.0000	10.0000
>	08/04/2017 08:30:27 AM	16.0000	145.0000	65.1500

1 2 3

ec2-54-91-0-59.compute-1.amazonaws.com:8085/pump#

11. To add a new measurement, click the  [Add icon]

12. Enter your measurements; to calculate pump load and efficiency, enter, at a minimum, the pump's **Flow rate (mgd)** & **Pressure (psi)**
13. Click **Update** to create the measurement record



ec2-54- https://app.motorsatwork.com/dashboard



Search criteria

Inventory

My Motors ? My Pumps

List Edit Details Measurements

Export to Excel ?

	Measurement Date	Static Suction Head (F...	Static Discharge Head...	Pump Discharge P
	08/07/2017 09:10:13 AM	16.0000	145.0000	9.2600
<ul style="list-style-type: none"> Inlet Velocity (m/s): 2.4712 Outlet Velocity (m/s): 22.2408 Velocity Head Inlet (m of head): 0.3113 Velocity Head Outlet (m of head): 25.2117 Velocity Head (m of head): 24.9004 Total Head (m of head) : 74.6414 System Efficiency : 46.779 % System Friction Losses (m of head): 0.6682 Temp Flow Density : 3.9795 Pump Discharge Power (kW): 178.5355 Static Suction Power (kW): 19.4071 Velocity Head Power (kW): 99.0905 Pump Hydraulic Power Output (kW): 2 Pump Hydraulic Efficiency : 53.0572 % Piping Efficiency : 98.5107 % Motor Power (kW): 559.8357 				
	08/07/2017 09:07:07 AM	16.0000	145.0000	9.6700

1 2 3

14. Click the > [caret] to expand your measurement and see Motors@Work's analysis



Get an unexpected result?

Need more help?

Motors@Work's online [Help Library](#) contains the latest tips & tricks — just click the  [[Help icon](#)].