General Users Guide to Completing Project Workflows

Revised 8/20/20

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Getting Started

Downloading & Installing measureQuick HVAC

Apple Devices (iOS)
Download and install from the iOS App Store: search ***measureQuick HVAC***

Android Devices (OS)
Download and install from Google Play: search ***measureQuick HVAC***

Logging-In & Setting up an ICF link

Enter the information on the login screen and use the email that is registered with the ICF program. This will give you access to the appropriate projects. Accept the User License agreement by scrolling to the end and tapping “accept.”

After logging in the first time, look for the icon in Figure 1.2.
Tap “Check Permissions”
You should see the programs from ICF that the user has been enrolled in based on the email address provided.
Tap “Dismiss” and you are ready to begin a project.

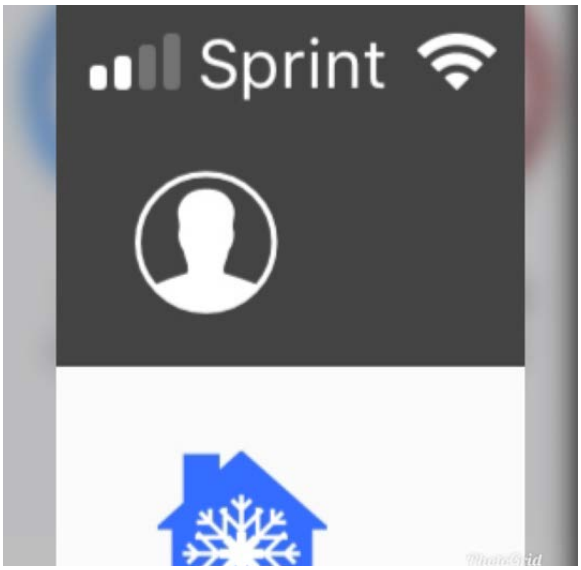
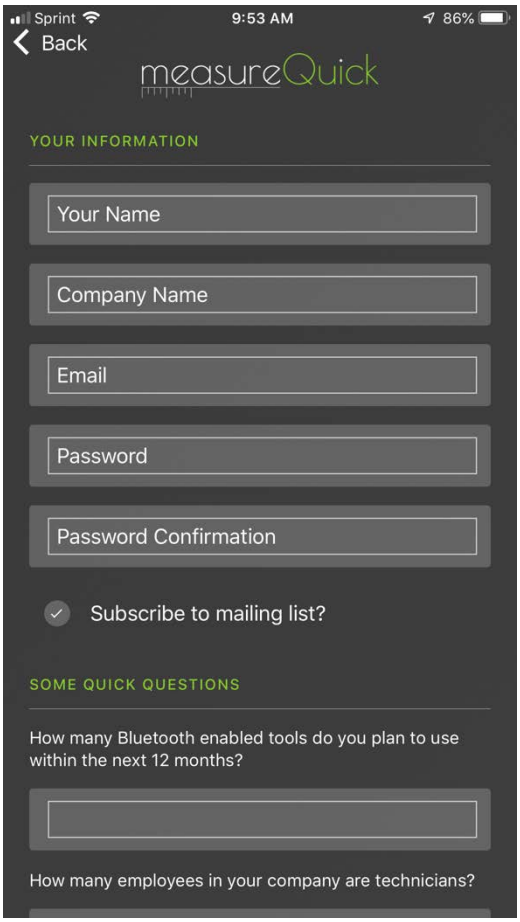
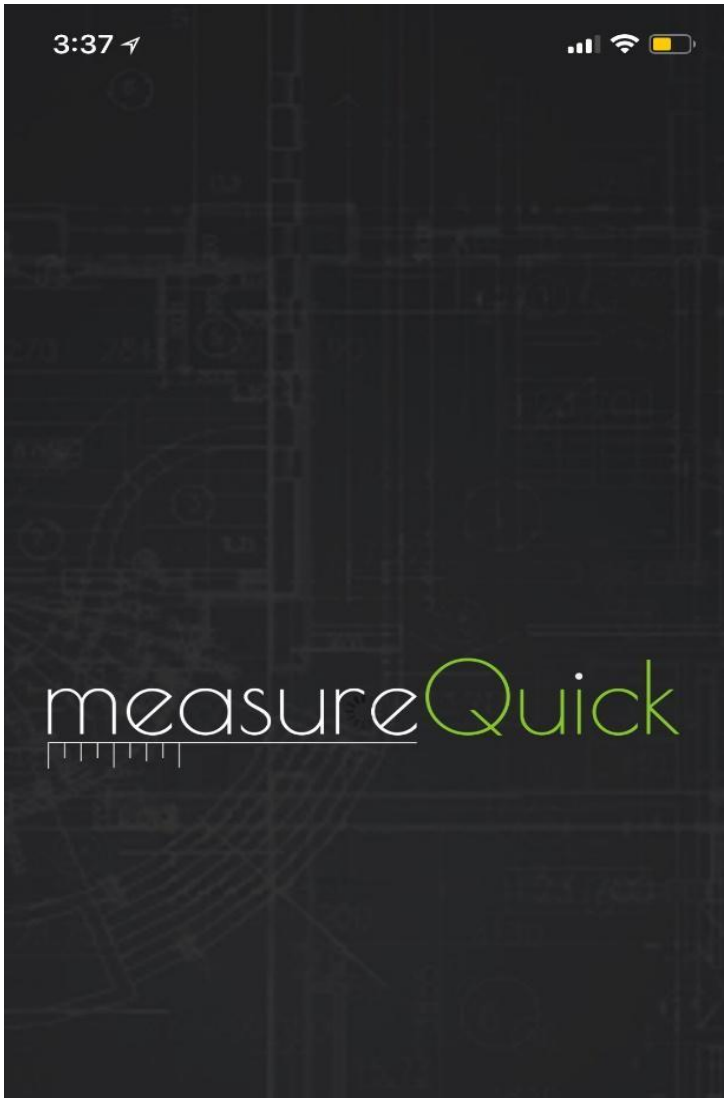


Figure 1.2



measureQuick HVAC Application

The purpose of this manual is to show instructions on how to use the measureQuick HVAC Application (mQ HVAC) in order to be in guidance by the Energy Commission.



mQ HVAC and Smart Tools
This instruction manual shows how to navigate measureQuick (mQ) to perform testing, and access data from Bluetooth tools without interference. Then, once the testing is complete, the test data can be sent to an authorized Data Registry.

mQ HVAC Application
The mQ HVAC Application is a measurement aggregation validation software application that leads the user (using a smart device) through a step-by-step process to perform tests.

The measurements are sent to the mQ HVAC Application using Smart Tools with Bluetooth technologies, QR codes, IoT (Internet of Things) protocols or other digital means of data transmission, then saved, ensuring the accuracy and integrity of the test data.

Testing Results and Correction
mQ HVAC leads the user through the project process and shows the user if the results are in the correct range for compliance. If the project is non-compliant, mQ HVAC will diagnose faults and provide Just-In-Time Education so the technician can correct the issue and retest.

Navigating mQ HVAC

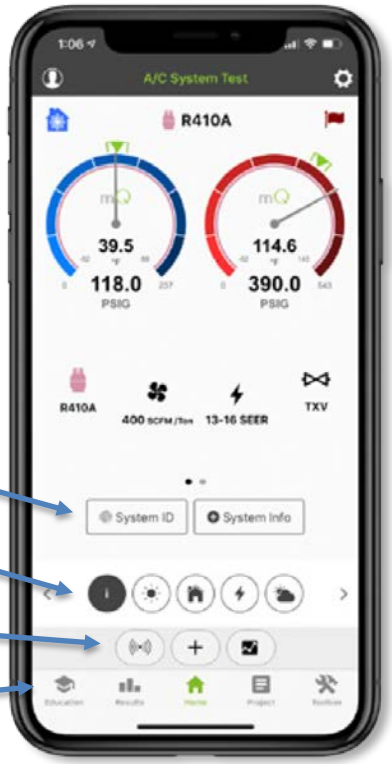
This instruction manual focuses on how to use the mQ HVAC application and how to upload data from the field.

Home Screen Navigation

When the app is opened, the Home screen icon will be highlighted in green. It shows the “A/C System Test.” screen.

Navigate the workflow by using the icons on the “Quick Access Toolbar” at the bottom of the screen.

The icons represented here are to select measurements from the Home Screen Menu.



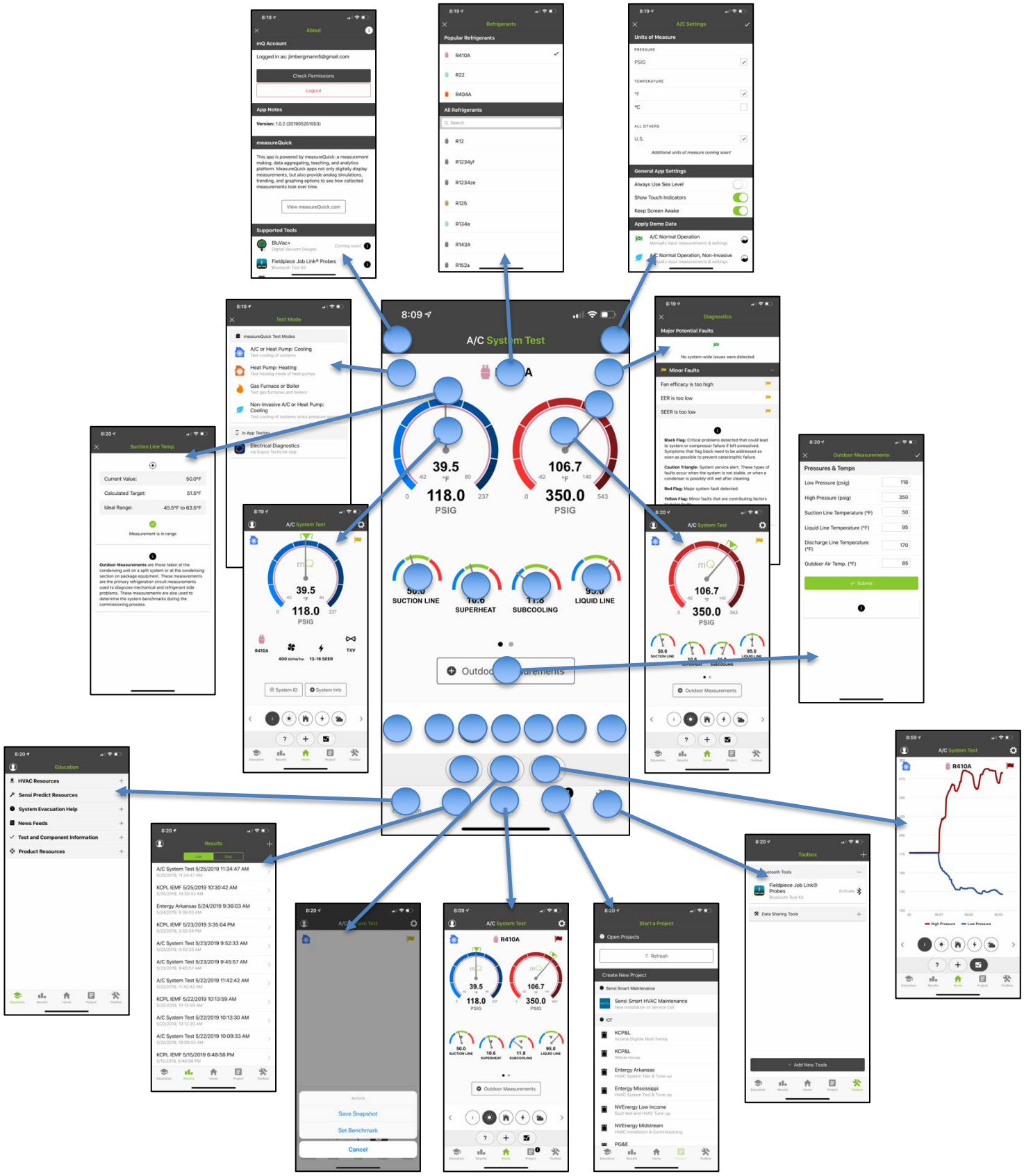
Manual inputs boxes

Quick Access navigation

Action buttons

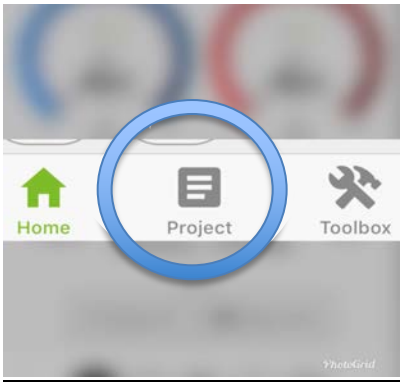
Application navigation buttons

Typical Touch Points



Starting a Project

A new project will be added by the contractor in the field.
From the main screen, tap “Project”
Figure 2.1



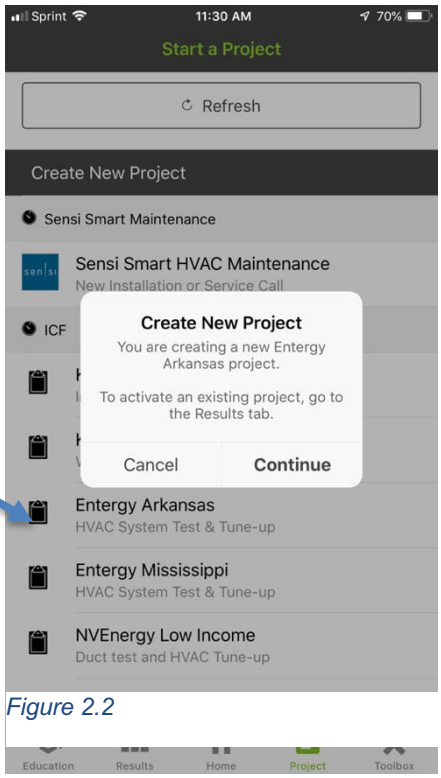
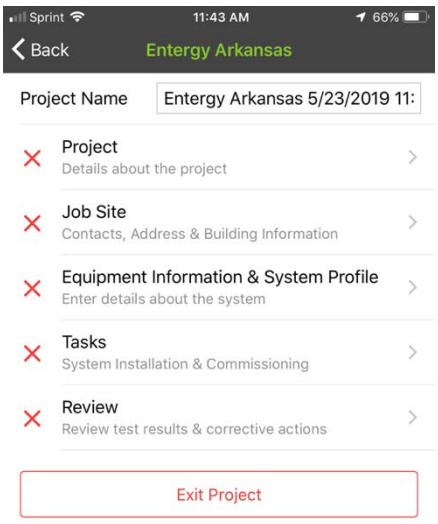


Figure 2.2

The user will see a project workflow for the program they are testing in. In this example, we will use the Entergy Arkansas workflow.

Click on the “Entergy Arkansas” project workflow
User will see the something similar to Figure 2.2
Click “Continue”



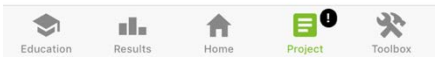
Project Name:

In this example, the project name will default to {Entergy Arkansas [date] [time]}. This can be edited if required or desired.

Project Workflow

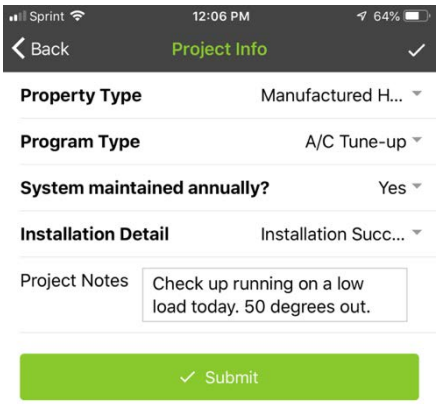
Projects workflows are unique to each utility program and contain a series of steps to gather information or collect measurements about the HVAC system or performance of the HVAC system

The red “X” indicates the information in this section is incomplete or has not been completed.



Project Information (workflow specific)

Tap “Project” to add or see specific details about the project.

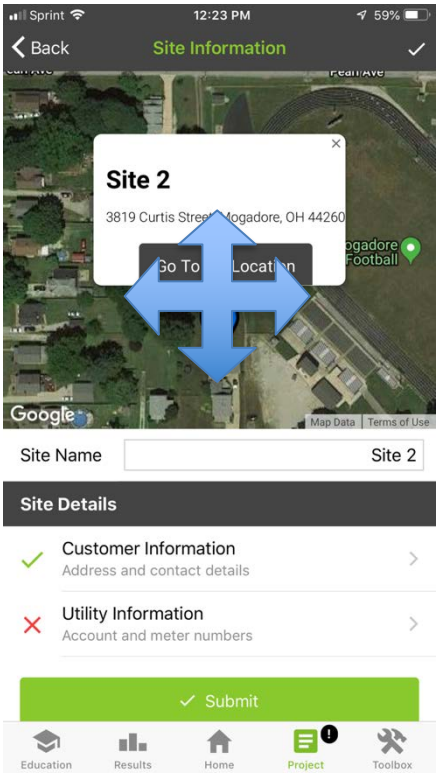


Adding Project Information:

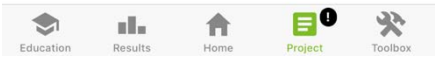
Using the dropdown menu, fill out the project information. Add project notes if there are any and either tap “Submit” or tap the check mark in the upper right corner.

After submitting, a green ✓ check mark indicates the project information is complete and has been entered successfully.

A red “X” indicates that the information in the associated category is incomplete. Missing information may be added or revised at a later time.



Adding Job Site Information:



Adding Building Location Information

mQ finds the general location of the building or site and the user **must drag the blue pin** to the exact address. The geolocation is then recorded.

Tap “Customer Information” and continue to fill out the form. **All the fields in bold MUST be filled out.** mQ automatically populates the address to the customer information and records the coordinates.

After filling out each section, a green check mark indicates the customer information is complete and that all the required building information has been added.

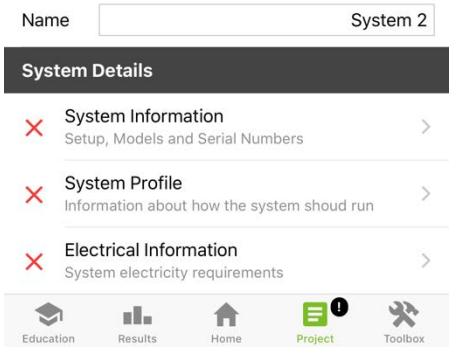
If the user doesn’t see the green check, go back and complete the information now highlighted in red.

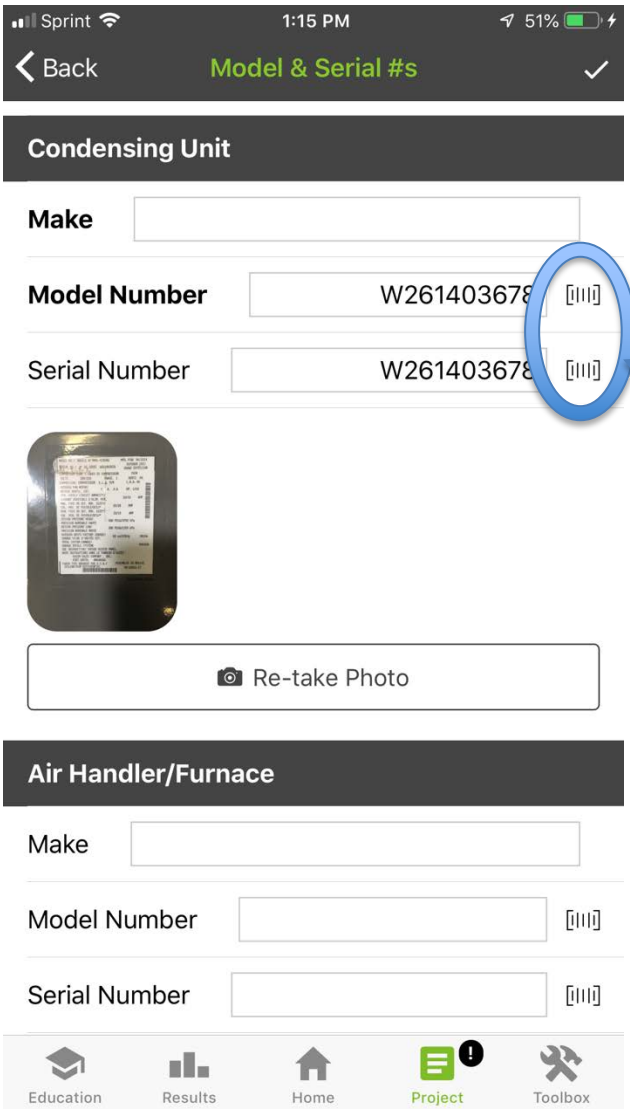
User can acquire the utility account number from home owner and/or scan the barcode of the meter when required.

Equipment Information & System Profile

mQ will prompt the user to **drag the blue pin to the exact location of the equipment** that will be tested. The equipment geolocation is then verified and recorded.

The blue circle may not move with the pin depending on if the user is connected to Wi-Fi or not. Do not be alarmed if the circle does not move. mQ uses the pin location as the equipment location. A phone GPS at best has a repeatable accuracy of 50'





System Information

User will fill in the information.

Adding System Details Using the Barcode Scanning Camera

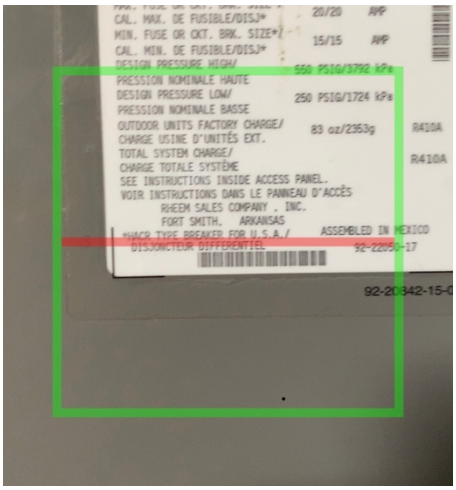
Select the Barcode Scanning Camera Icon to the right of the field you are entering to scan model and serial numbers.

Scan Using the Barcode Camera Reader

Hold up the barcode to the camera.

The Barcode Scanning Camera will pop-up with a dialog box to access the camera.

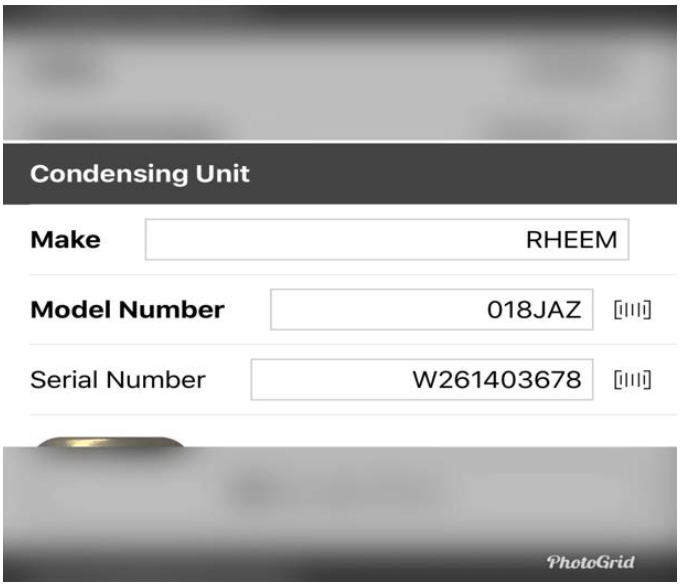
Press "OK"



Manually Entering the Model Number

If the barcode scanner worked, then great, but always double check. Barcode information is set up by the equipment manufacturer.

Barcode reading is “hit-or-miss”; based on the manufacturer. You must double check your number, correct any mistakes or enter the model number by hand.



Add Equipment Tag Photo

mQ makes it easy so that photos don’t have to be uploaded from another device.

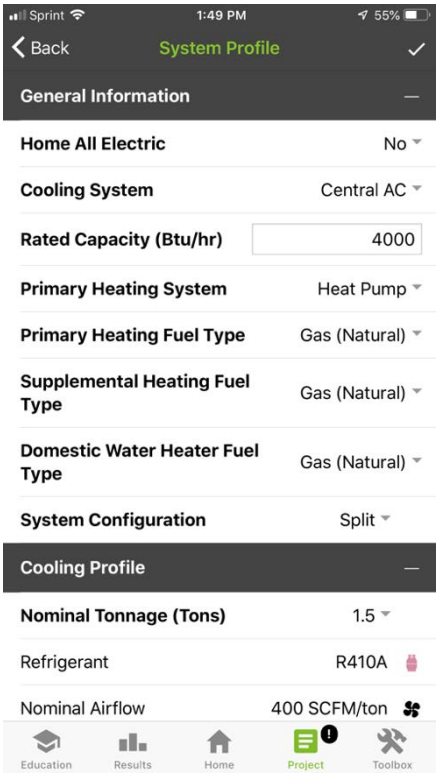
Take a photo by tapping “Take Photo”

User should have a clear photo showing the product and model number. If not, re-take.

Photos of verifications are stored on the smart device as well as in the project for export with PDF reports.

Entering the System Profile & Electrical Information

When System Profile and Electrical Information forms are completed, user will tap “Submit.”



Tasks

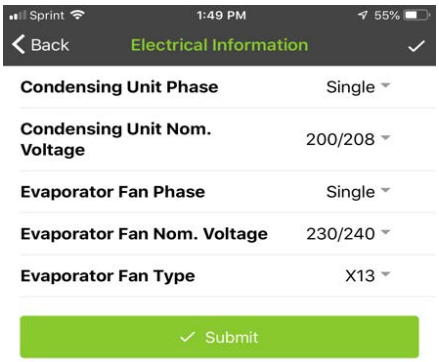
System Profile

The system profile is one of if not the most important element of completing a project. Information entered here will drive all of the performance and diagnostic tools in the measureQuick application.

Nominal tons will be used to calculate capacity and airflow, the refrigerant type is used for coil temperatures as well as superheat and subcooling calculations.

Nominal airflow or “design airflow” will be used to determine suction pressure targets.

SEER will be used to determine the head pressure targets.



The **metering device** type is used to determine the target superheat and subcooling as well as the charging process.

The **high efficiency evaporator** switch is used for evaporator targets.

Superheat and subcooling targets are drivers for correct charge indication

Total External Static Pressure is the driver for allowable duct pressures.

Extended Performance Ratings drive performance targets when more precise information about the system operation is known.

Electrical Information is used for electrical diagnostics. The **Heating Profile** uses a set of similar drivers

Project Tasks

A/C System Test In & A/C System Test Out

At this point in the project or at any time before this point, the user must hook up their wireless probes/gauges to the unit. Data can be viewed graphically or in a list.

Tapping “View on mQ Home” will bring up the gauge representation.

Tapping “View” on the right of the workflow navigation buttons will bring up a list view of the data in each section.

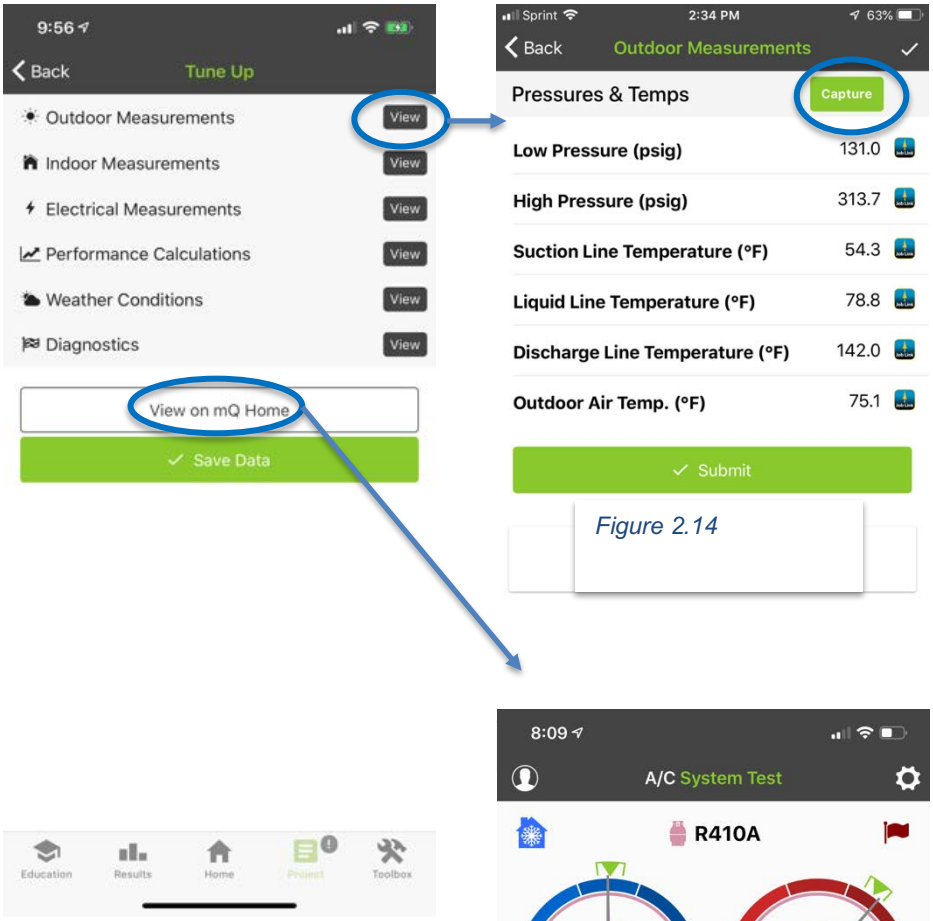


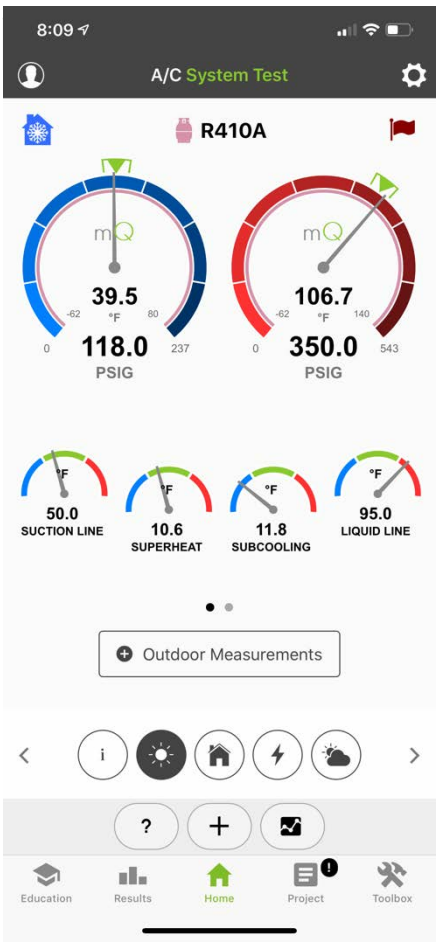
Figure 2.14

Outdoor Measurements

Tap “View” to display the measurements that would typically be made outside at the system condenser.

Any wireless probes that are hooked up to the unit will auto populate in the associated fields.

If there are no probes hooked up to an associated field, a grey input box will be there for the user to enter the data manually. When all fields are filled in, tap “Capture” (see Figure 2.14). Capturing the data will freeze-frame the data and upload it into the form. Tap “Submit” and return to the Tune Up screen.



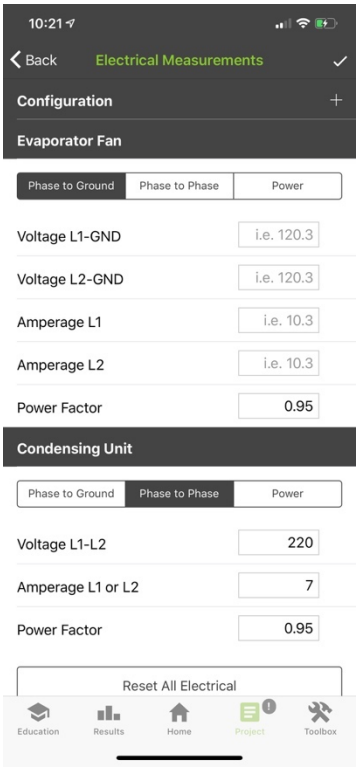
Indoor Measurements & Electrical Measurements

Electrical measurements are used for determination of the SEER and EER calculations, fan efficacy as well as the capacitor health of the system.

Measurements can be entered the following ways:

- Phase to Ground
- Phases to Phase
- Power directly

Using a Redfish iDVM550 Single Phase Power Meter is the fastest and most precise way to measure electrical. The iDVM550 measures power and power factor directly. Otherwise the power factor is assumed.

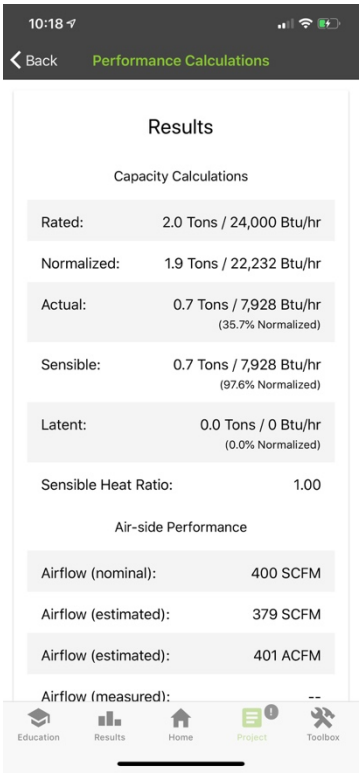


Capacity Calculations

Tapping the Performance Calculations will show the actual as well as the normalized capacity. Capacity is normalized (corrected) for the following:

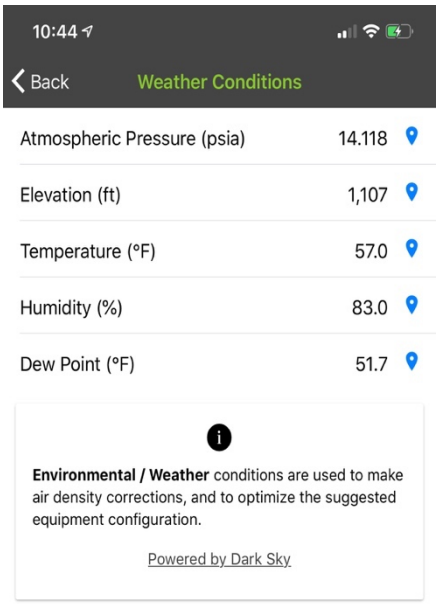
- Outdoor air temperature
- Indoor dry bulb and wet bulb
- Airflow
- Voltage
- Line set length

System airflow is calculated using a mass flow equation and determines the CFM/Ton of cooling. The rated capacity used in the system profile multiplies the CFM/Ton by the nominal tonnage to determine the total system airflow. If the nominal capacity is not entered mQ will default to 1-ton (12,000 BTUh)



Weather Conditions

Weather conditions are used to correct the temperature pressure charts for elevation, and to assure that the test conditions are within the guidelines of the program requirements. Weather information is pulled from nearby weather stations. Information pulled from weather stations is not used for any mQ calculations. All calculated data comes directly from probes.



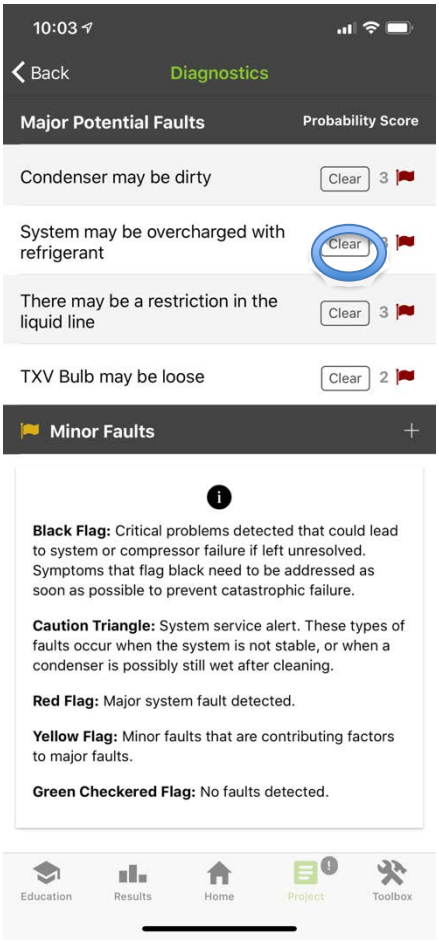
Diagnostics

The diagnostics show what may be wrong with the unit you are analyzing. Flags can be cleared by the user after a determination is made that the issue does or does not exist.

The number next to the flag is a “symptom of” the fault being shown. In this case there are three symptoms of a dirty condenser, and over charge of refrigerant and a liquid line restriction as well as two symptoms of a loose TXV bulb. The symptoms are derived from the minor faults that can be viewed by tapping the (+) sign. The technician is to perform a visual inspection and other tests to determine what the fault actually is. In this case, cleaning the condenser coil may clear all of the faults listed below.

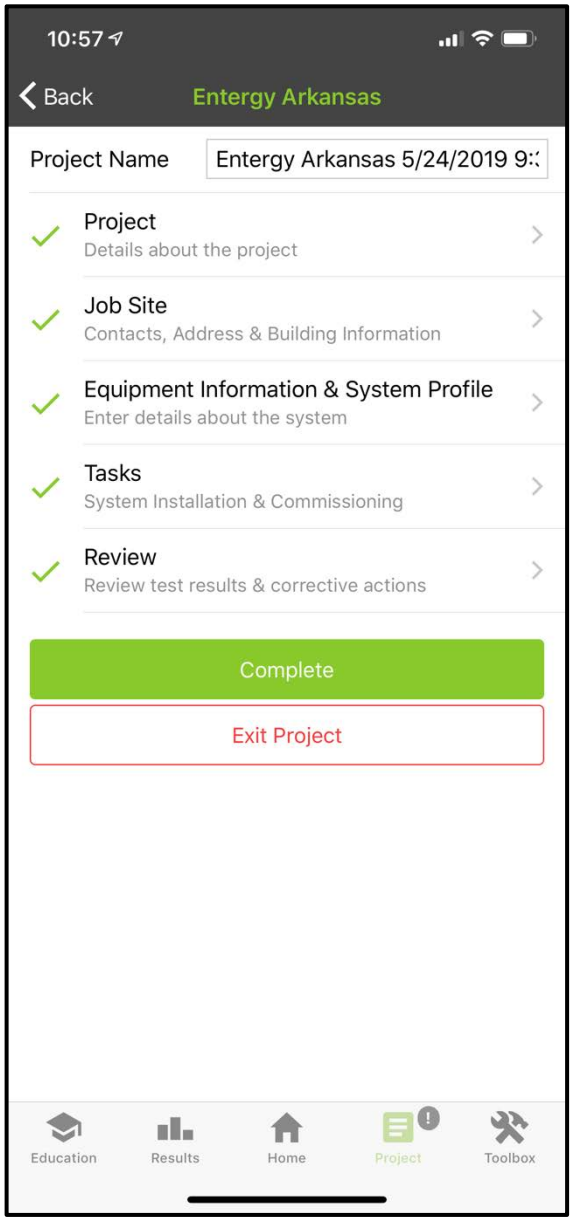
When Diagnostics are done being troubleshot, the user can return to the Tune Up screen and tap “Save Data.”

Return to Task screen and continue through A/C System Test Out. When done with that section, tap “Submit” under the Task screen



Review

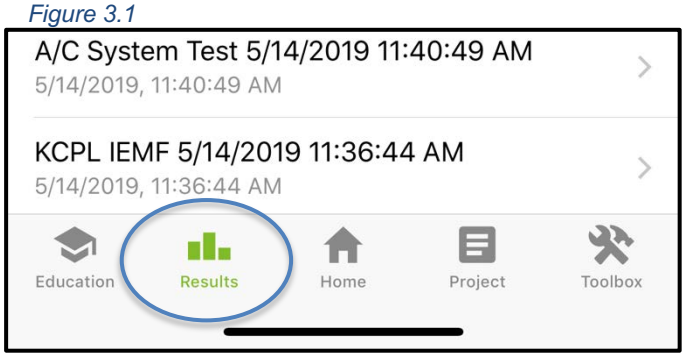
Under the Review tab, take pictures as requested that are required by the ICF program.
Return to the Project Main sheet and tap “Complete.”
A prompt will appear informing the user that the project was submitted successfully.
The project can now be exited.



Results

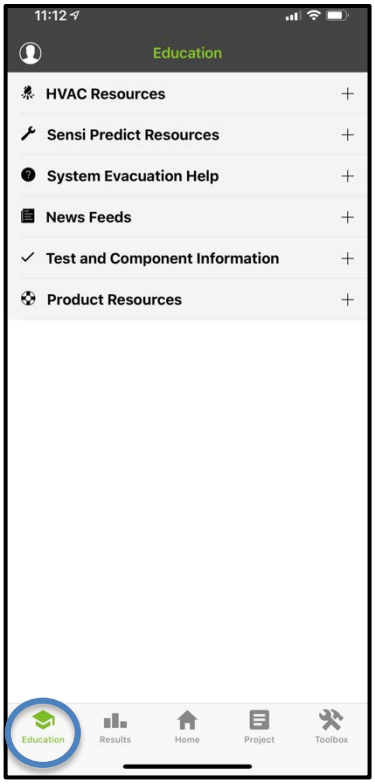
Previous projects or exited projects can always be reopened by tapping “Results.” (Figure 3.1)
The user can tap the project they want to reopen and then tap “set as active.”
That project is now the active project and can be edited.

Figure 3.1



Education

The Education tab is a resource available to the user to look up information about measureQuick and products that are used with the app.



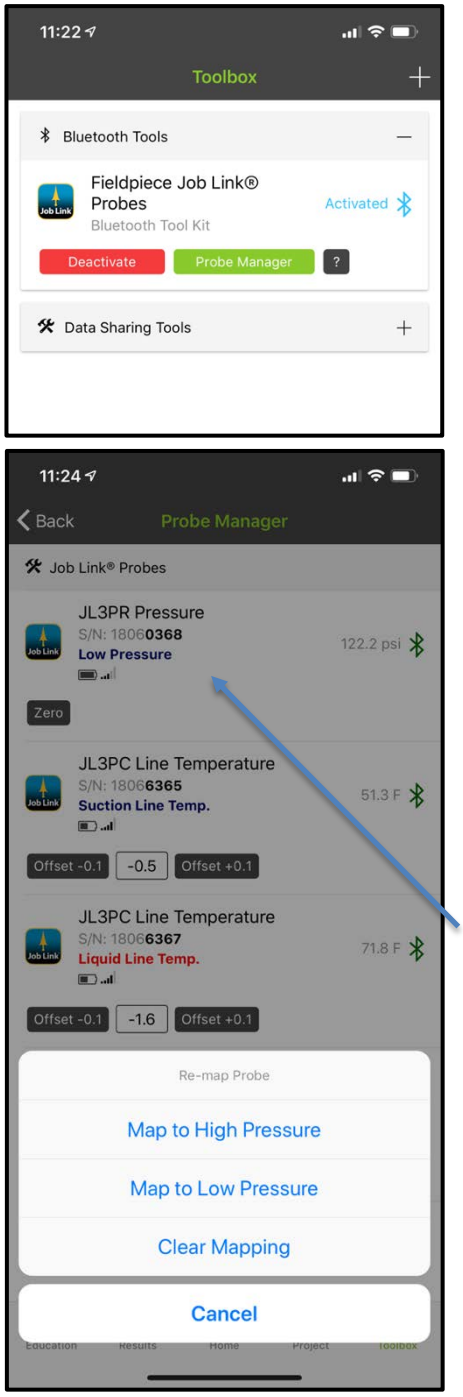


Figure 4.2

The Toolbox

In the toolbox you can either add your Bluetooth gauges or you can connect through another app.

Connecting Bluetooth Tools

Make sure the tools/gauges that are being used are turned on.

Under the toolbox tab, tap "+ Add new tools"
mQ will scan the local area for any Bluetooth tools
The probes will start to populate, and the user will be able to see them.

To connect the probes, tap on "Probe Manager"
The first time the user uses the probes, the user will have to map them to the appropriate gauge they are measuring. If the probes are not mapped, they will not operate the "gauge" view.

Tap on the probe
A menu will appear like the one in Figure 4.2
Select which option is linked to the probe you want to map.
For instance- I selected the JL3PR pressure gauge (0368) and I want it to measure my low pressure, so I tap on it and select "map to low pressure."

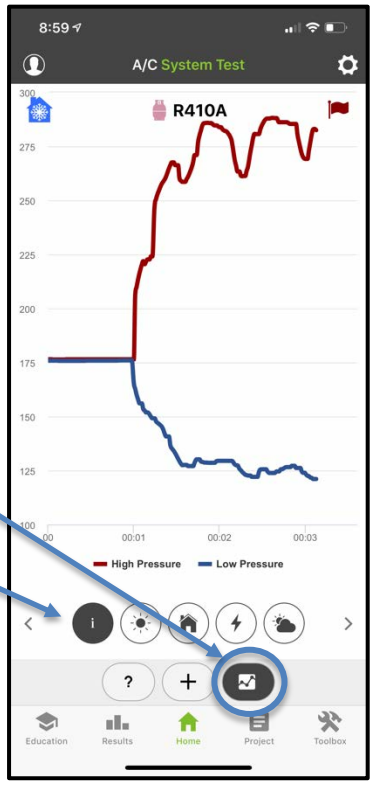
That gauge is now linked to low pressure and will remain like that until the user changes it.

An un-activated tool can be deleted by tapping and holding the tool icon until it turns grey and swiping left. A delete option will appear and the user can tap "Delete."
The tool must be de-active before it can be deleted. User can tap "Deactivate" to do that.

Trending:

Trending allows the user to see a visual representation of the system operation over time to verify system stability or trends like TXV hunting that could indicate other system wide issues. The user can trend the following by tapping the trending icon and scrolling through the workflow navigation buttons.

- High and Low pressure
- Superheat and Subcooling
- Suction Line and Liquid Line Temperature
- Return and Supply Air
- Temperature split and enthalpy
- Total and Sensible Capacity
- EER and SEER
- Outdoor Air Temp and Atmospheric Pressure



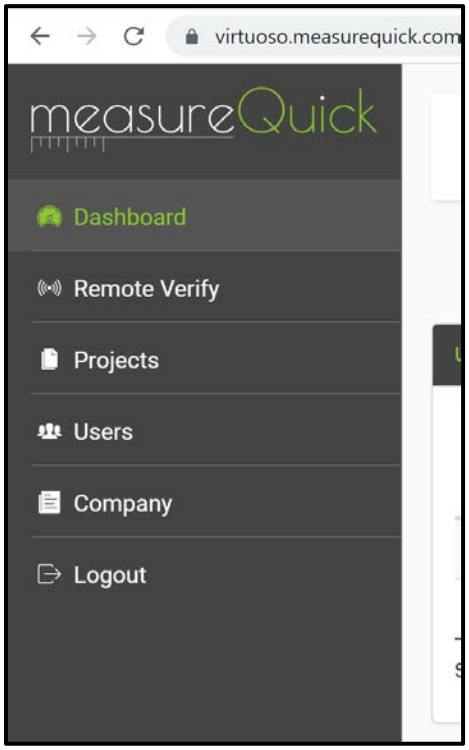
Virtuoso

The Virtuoso portal is the headquarters of your account. You can reset your password, load your QBit account, view live data streaming, view saved cloud reports, and manage your business account all in this one portal.

Logging in to Virtuoso

1. Go to www.measureQuick.com
2. Use the Log In button in the upper right corner.
3. Username and password is the same as your application log in.
4. If new account, password is assigned at the time of account creation. The company account administrator can reset a password for any user if needed.
5. Passwords must be 8 characters or greater.
6. Once logged in, the Log In button test will change to My mQ.
7. Mouse over the My mQ button and pick mQ Virtuoso.
8. You will be required to log in again.

Your Virtuoso Portal

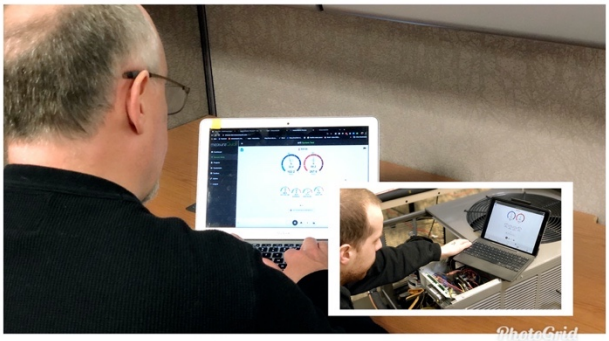


Virtuoso's Main Tabs

- Dashboard – currently displays all users assigned to company account.
  - Remote Verify – opens a view displaying all active data streaming requests from the company user base.
- Projects – List of all the company's projects.
- Users – List of all users assigned to the company.
- Company – Displays company information.

Remote Verify View

Remote Verify opens the window that will display all active data streams within the company. Data streams for either tech support or quality assurance purposes are initiated by the technician in the field. Once initiated it will populate in this view and display a unique ID number. There is no automatic notification of an active stream, the technician that initiates it must call or text the appropriate person in the office. This is a Premier feature.

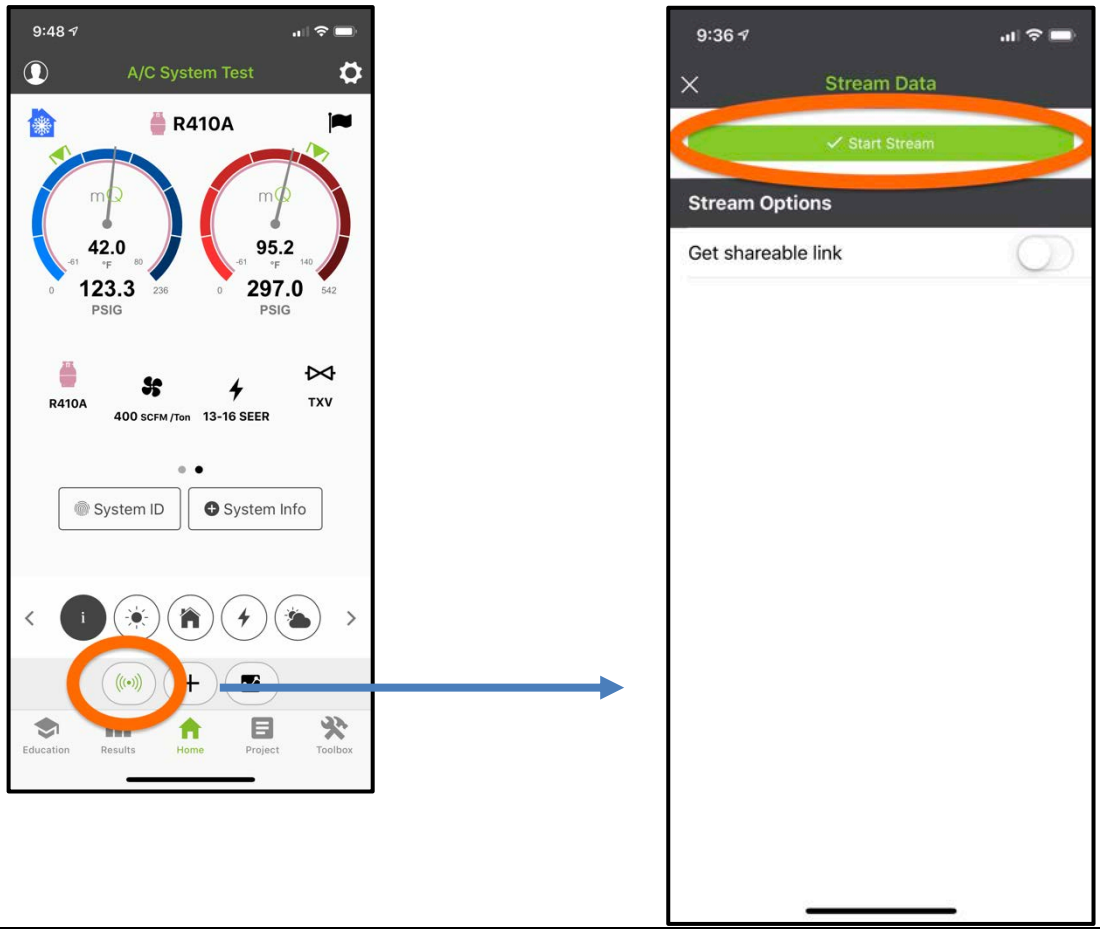


Remote verification can only be used if the field tech has internet access AND the reviewer has access to the web and can log into Virtuoso.

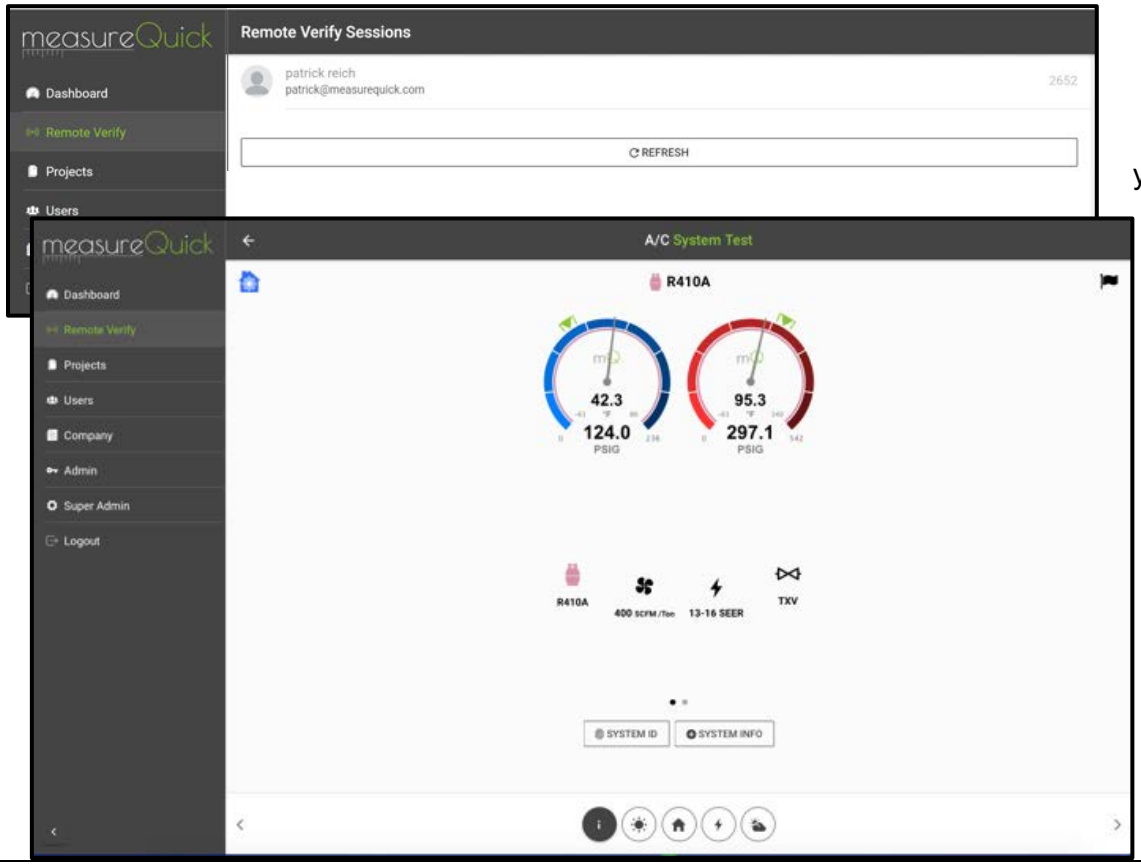
How it works

Your technician is on site using his cell phone for measureQuick. He/she can't figure out why the airflow is low. They need help. Normally when an issue like this happens, the tech will call another tech and verbally explain the issue and they spend valuable minutes just explaining what they're seeing. Now, no more of that. See exactly what they're seeing.

What the tech sees in the field



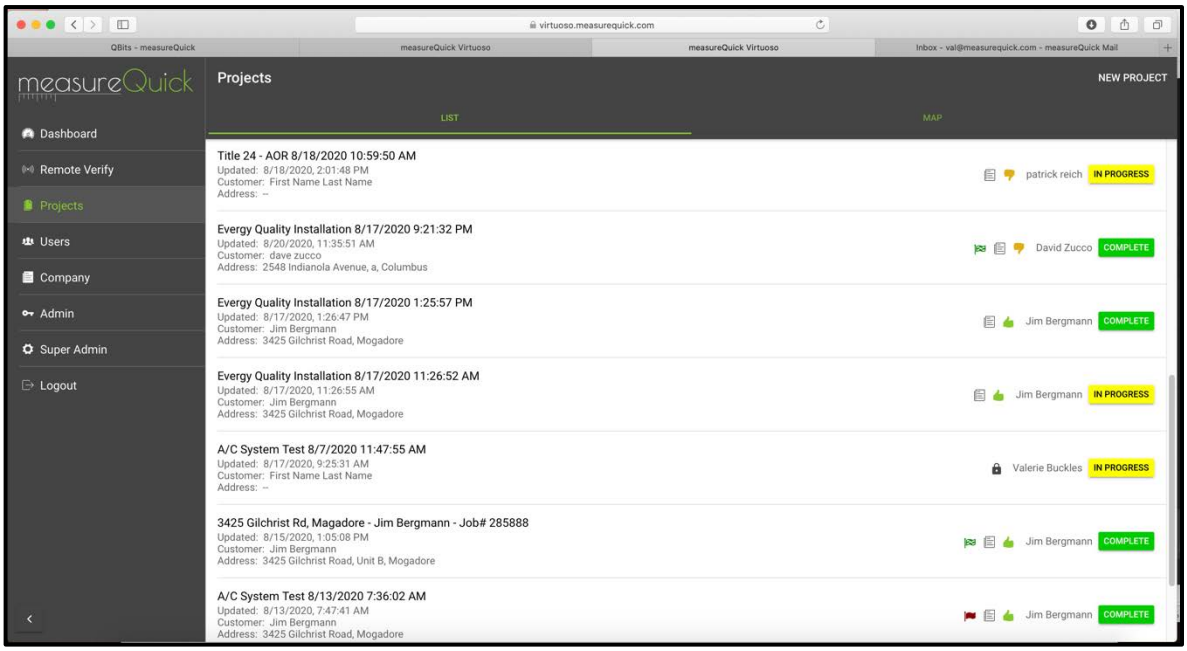
What home office sees

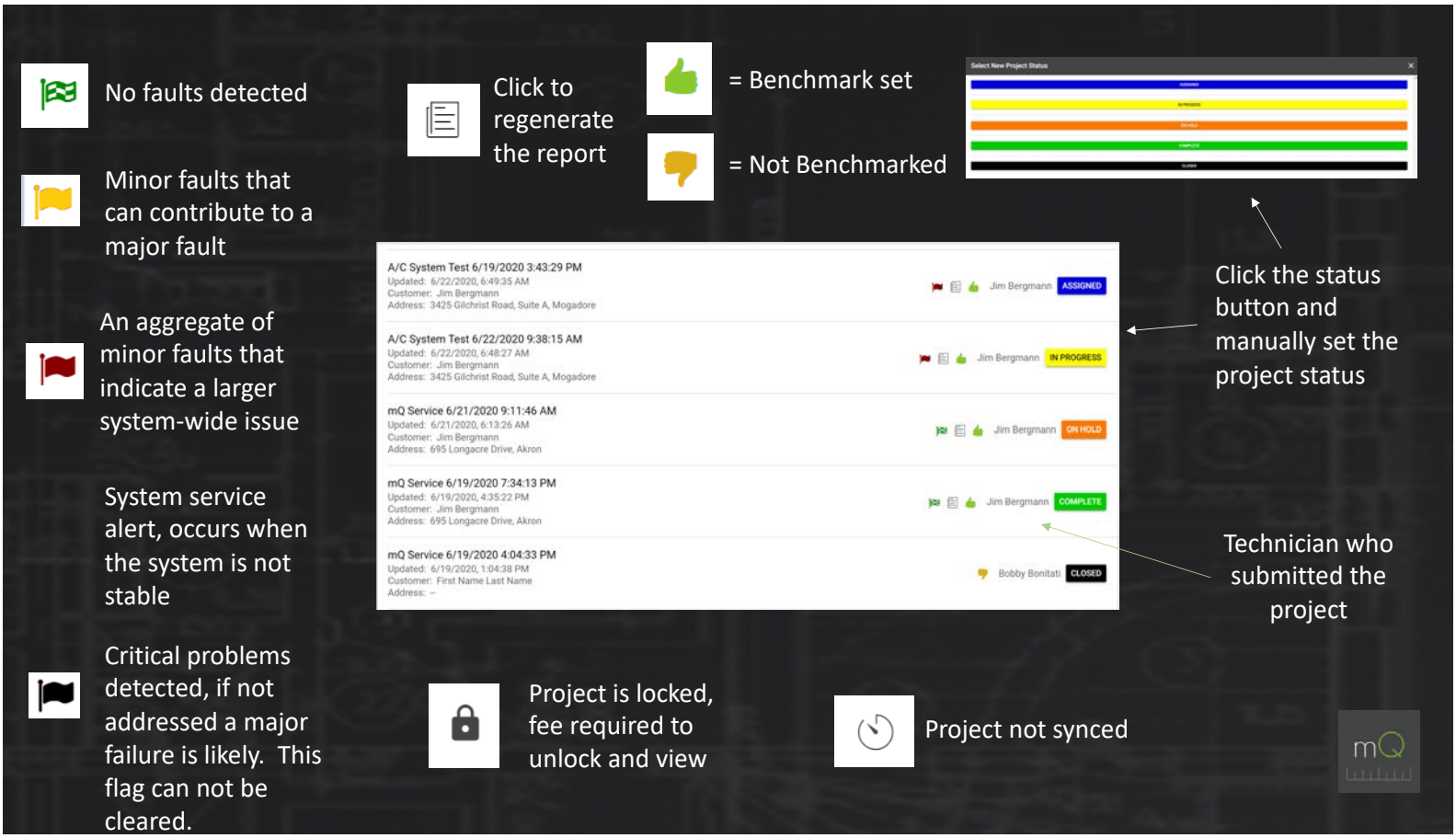


Go into the "Remote Verify" tab and select the technician you would like to stream data with.
The user at the home office can toggle through the Quick Access Navigation buttons independently from the technician in the field.

Projects View

Your “Projects” tab will display all your cloud projects. This is a free feature. However, if you want to view any of the projects, you will have to pay to unlock them. If you are a company admin, you will see all the projects the company has uploaded to the cloud and if you have an individual account, then you will only see your work.

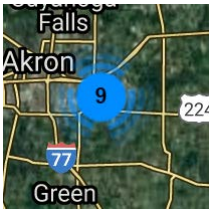


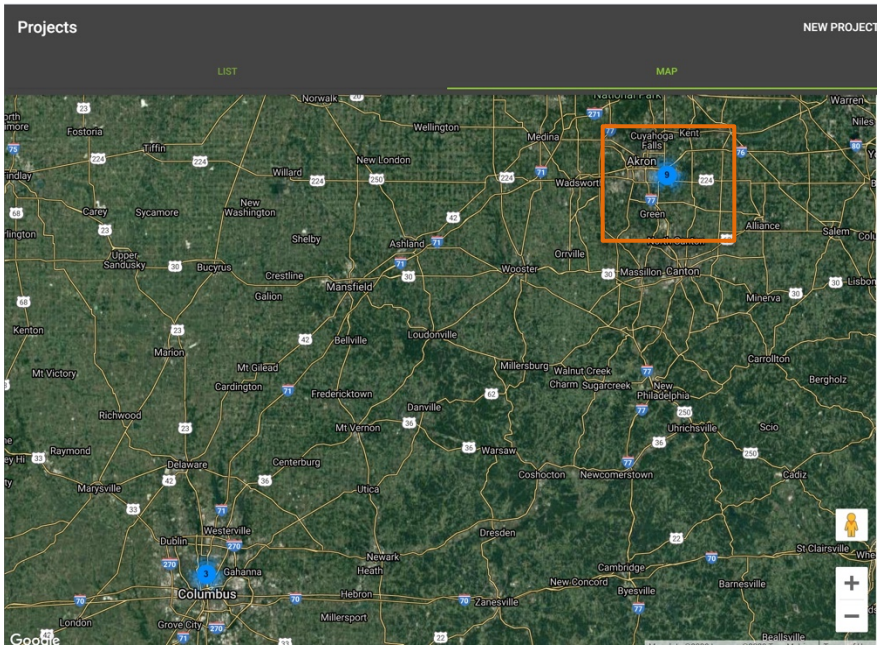


Projects – Map View

Google map view of all company projects

- Numbered pins can be selected and expanded for higher resolution of project locations

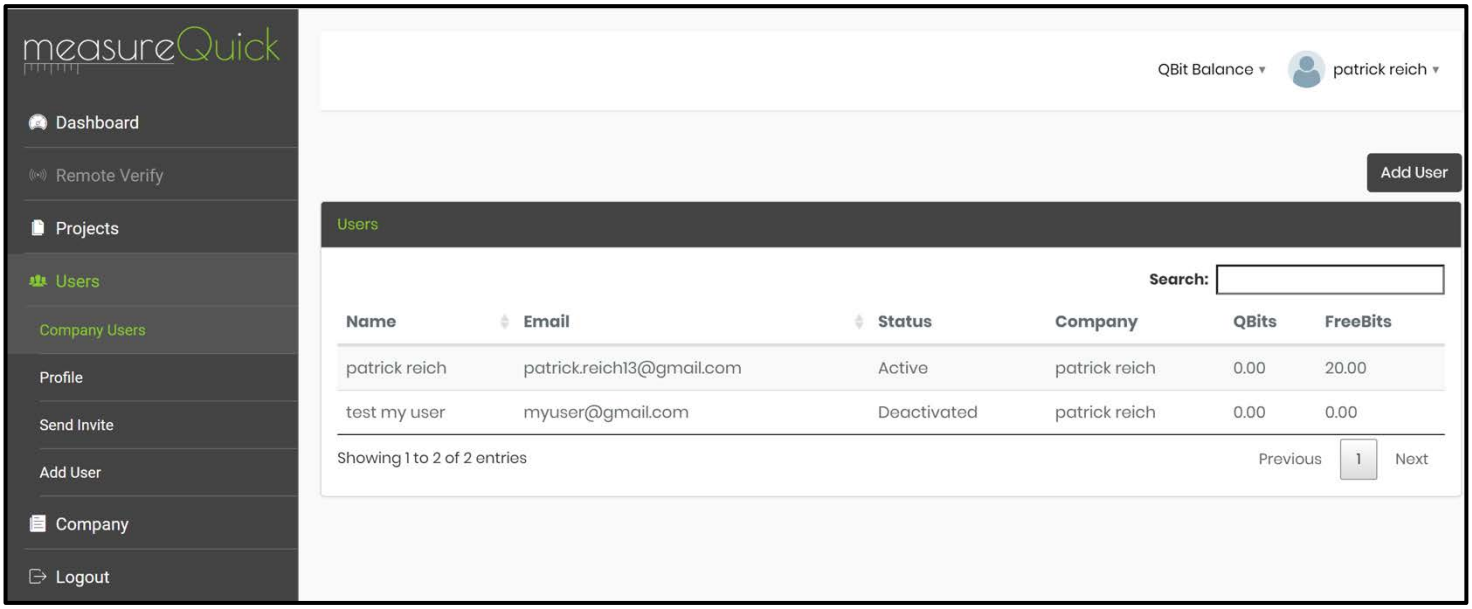




Users

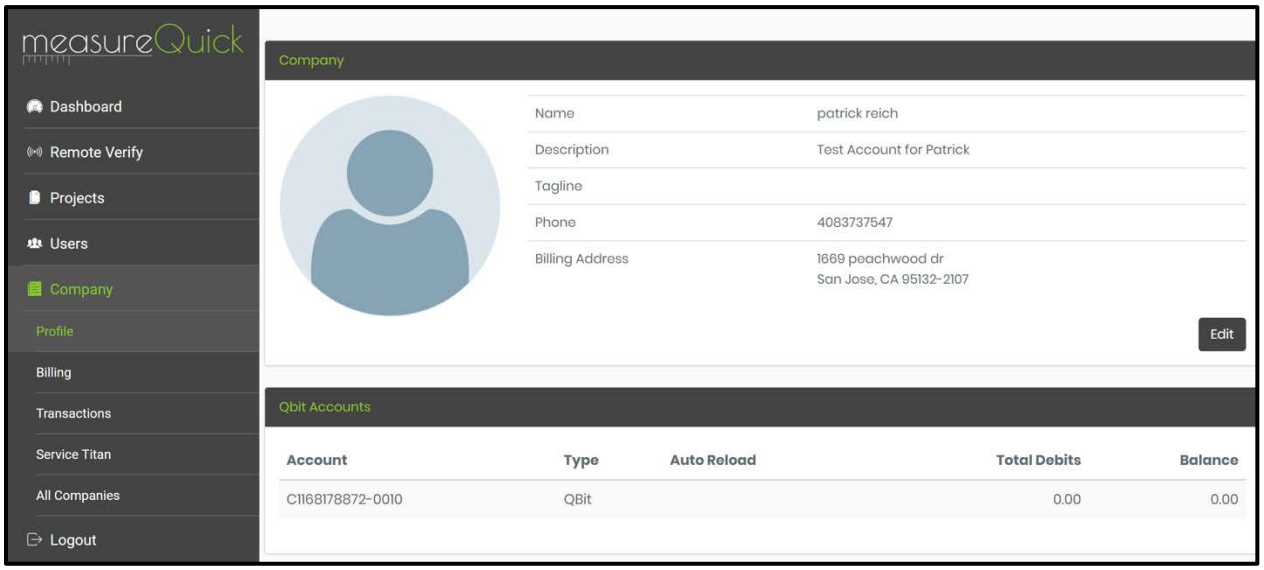
The “Users” view will display as such:

- Company Users
  - A full list of users assigned to the company
  - Selecting any user in the table will open that user’s profile and allow for editing and/or the ability to reset a password
  - **Do not add QBits to a user’s individual profile, QBits should only be added to the company profile**
- Profile
  - Displays the user information the company account was established with
- Send Invite
  - Allow you to enter in the email of a known mQ user and invite them to join the company
- Add User
  - Allows you to create a new user for the company



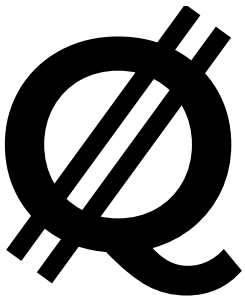
Company

The company view when opened will look like such.



- Profile
  - Displays an overall view of the company
  - Allows for editing the company information, including the option to upload a company logo
  - Displays the QBit account information, selecting the account number will display the transaction history
  - Selecting a user will take you to their profile
- Billing
  - This is an area for setting up the billing account information for QBit purchases
- Transactions
  - Opens a view which lists all the account transactions associated with QBits
- ServiceTitan
  - Opens a view for entering your ServiceTitan API key

QBits:



QBits are a prepaid currency we created. Think: Digital non-refundable gift card. Preload your account with Qbit credits and either set your account to auto reload when your balance hits a certain amount, or you can manually add credits to your account as needed.

1 Qbit = $1.00 Dollar

Minimum purchase: $20.00 (20 QBits)

We divided the app into 2 parts: Free features and Premier features. You are either using the app with strictly the free features, or you are using it with premier features (which also includes all the free features). When in doubt, the app will tell you if a feature requires QBits to use it.

Gain access to all of our Premier features for one flat price that's good for a full 365 days of service & testing for each system.

5 QBits / system / year

Unlock the premier features for a system once and have unlimited access to that project year-round, no matter how many times you use it. Pay to unlock an expired project only when the data is needed again beyond 365 days since the last time it was opened. We created a platform like this so, if you chose to, you could easily invoice the customer for the cost.

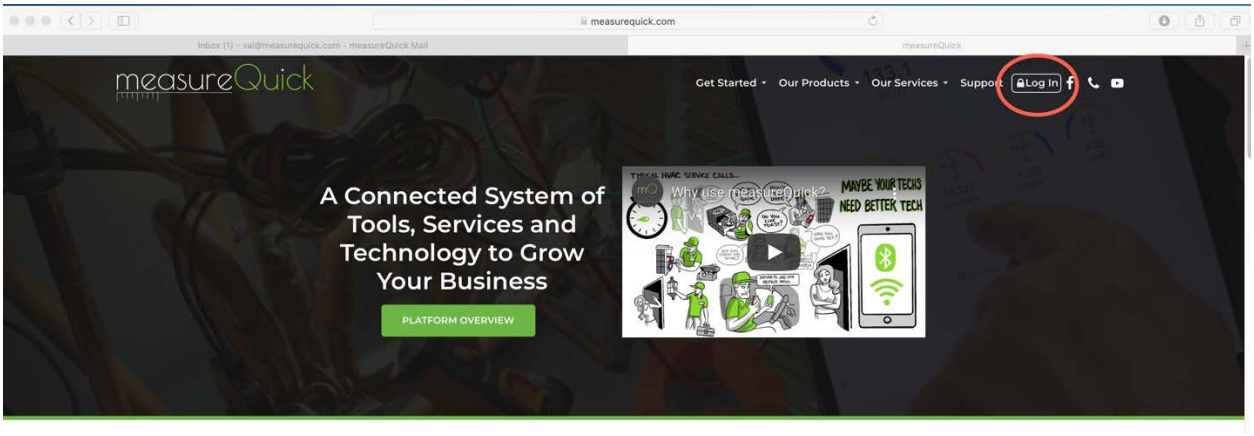
Here's a breakdown of what features come free and what are Premier.

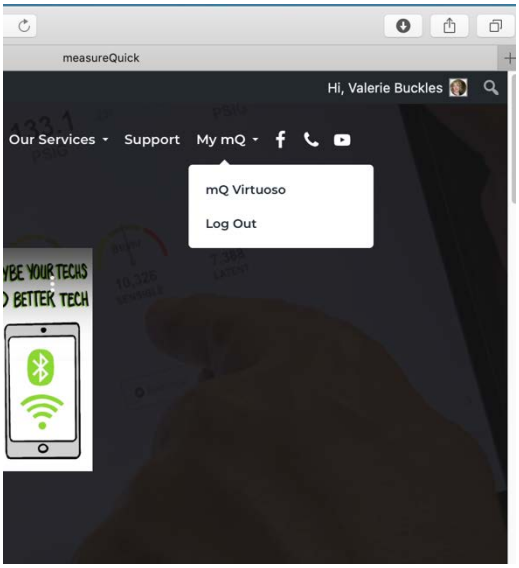
What's Premier (paid)	**What's Free**
• ServiceTitan® Integration • Access to saved projects on the cloud • Customizable reports • Live data streaming • Unlimited Photo Documentation	• Dedicated Workflows • Just in Time Education • Diagnostics • Cloud Storage (store as much as you want and only get charged when you pull data from the cloud) • Connected Tools • Benchmarking • System Trends

How to load your QBit account

For Individual Users

1.) Go to measureQuick.com and log in using the same log in from the measureQuick app.





2.) Click on mQ Virtuoso and follow the prompts to log in again.
3.) You will be taken to the measureQuick Virtuoso Portal.
4.) Find the QBit balance drop down in the upper right hand corner.
5.) Click “Buy QBits” (as seen in Figure 14)

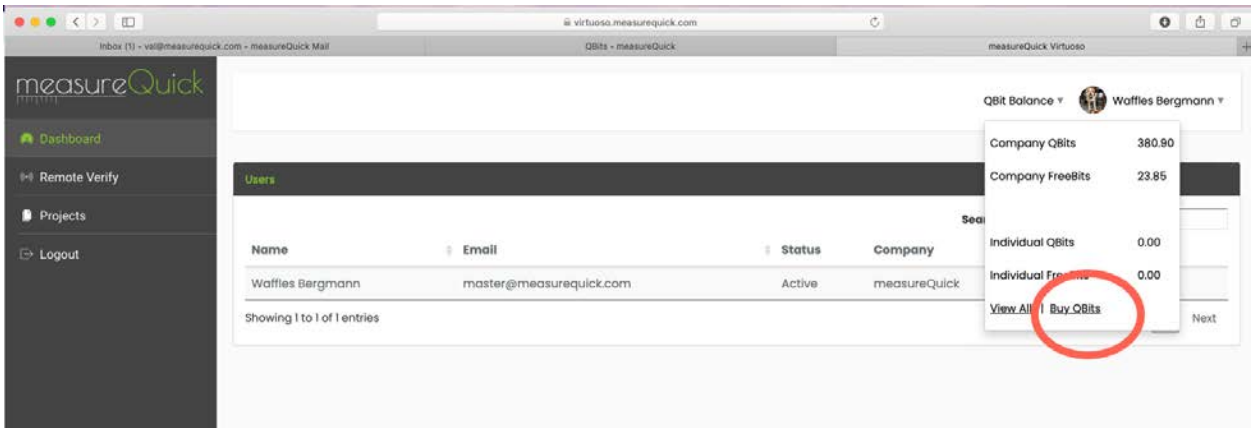
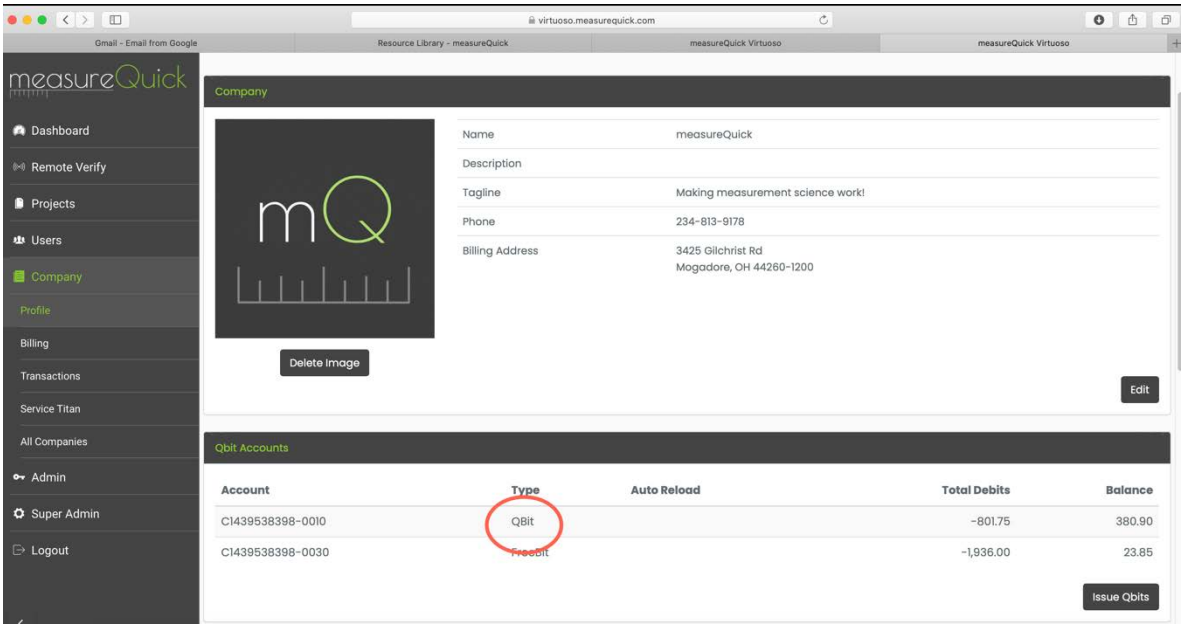


Figure 14

For Setting up a company

In order for a user to add QBits for a company, they must have permissions set as an admin for the company. Go to virtuoso.measurequick.com and log in. Click the “Company” tab on the left hand side panel.



The company view when opened up will display as such. Click on QBit to load the company account. (Make sure you have the company account open and not your personal, otherwise QBits will be loaded onto your personal account.)

FreeBits

FreeBits are like coupons and can be used just like QBits. You can earn FreeBits during promotions we offer. To see available promotions, check our website at https://measurequick.com/qbits/

FreeBits can also be earned if you're a new company setting up an account. We can load your account with FreeBits so your company can test the software without getting charged. If this is something you're interested in, please contact our sales department at 234-813-9178.

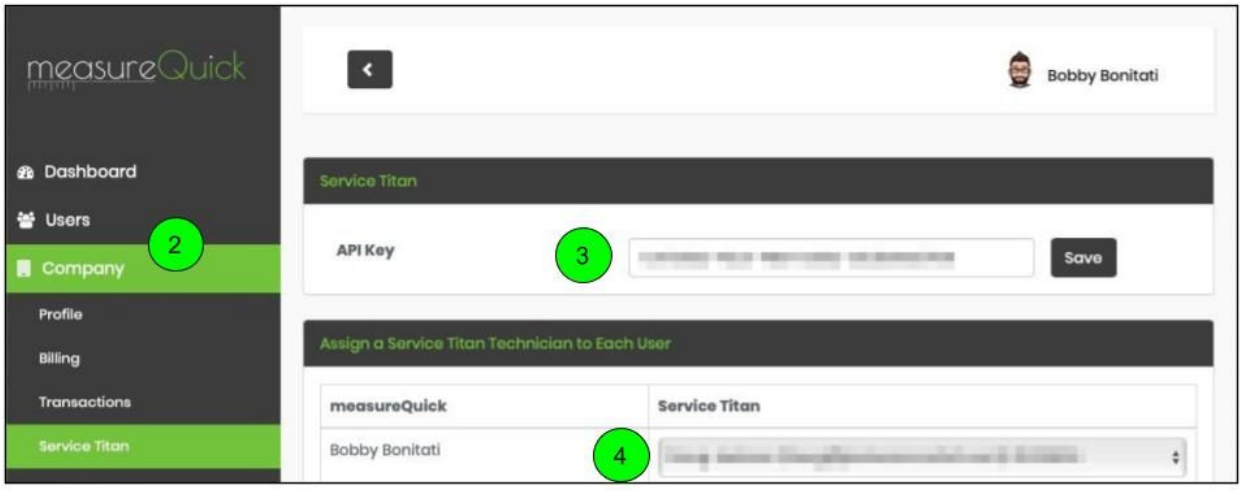
ServiceTitan® Integration with measureQuick

Obtaining a ServiceTitan API key

1. Confirm that all admins and technicians have a company email address in the ServiceTitan profile
2. The ServiceTitan Admin ONLY must contact ServiceTitan integrations by email at integrations@servicetitan.com and ask them for a API key for your company account
3. They will respond by email asking for the Admin ServiceTitan six-digit PIN number
4. After they receive, they will send your API code by email

Activating ServiceTitan with measureQuick

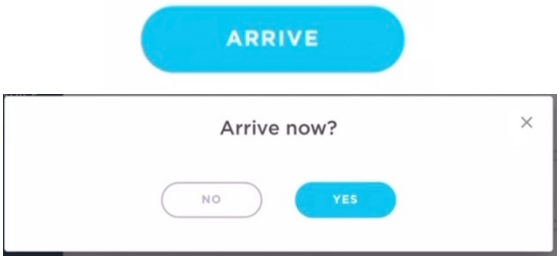
1. Login to virtuoso.measurequick.com with an account that has company administrator permissions.
2. Click "Company" on the left navigation menu, then click on "ServiceTitan"
3. Net to API key, input your API key then click "Save"
4. For each user in your company, choose the matching user from the drop down box in the ServiceTitan column then click "Save" under the list of users.

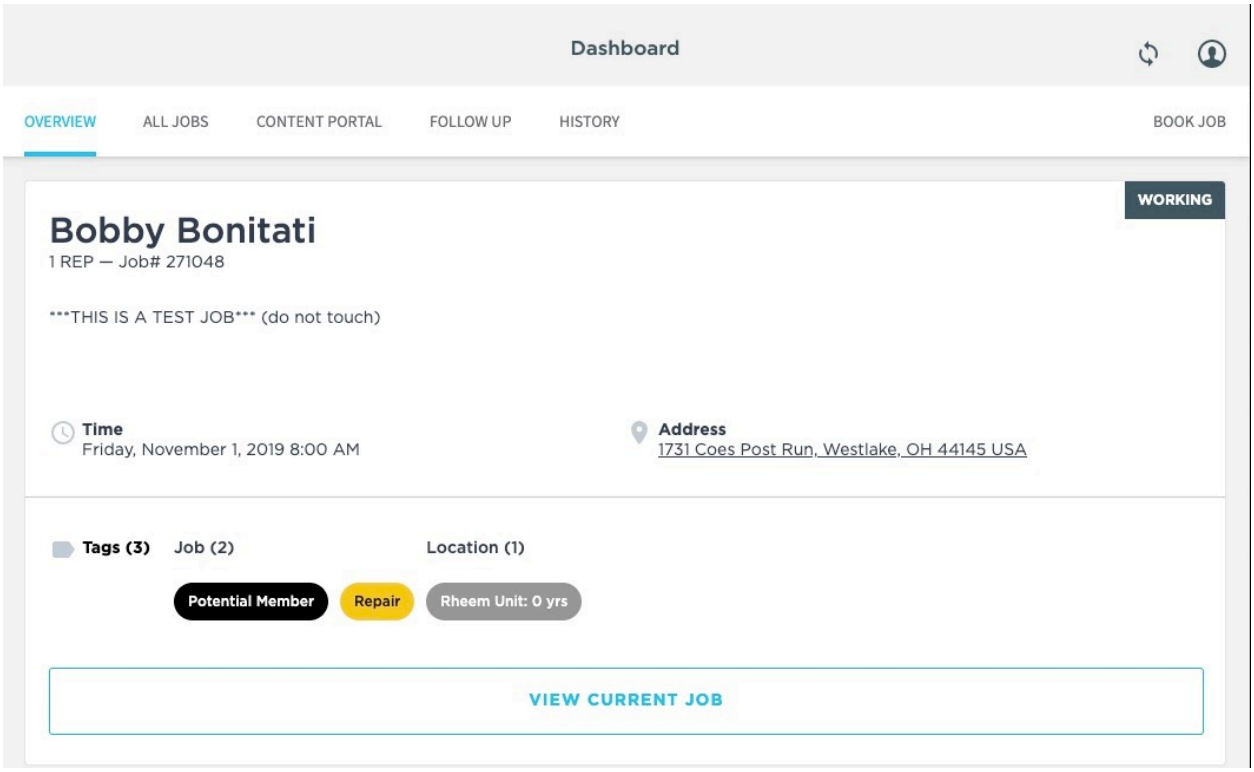


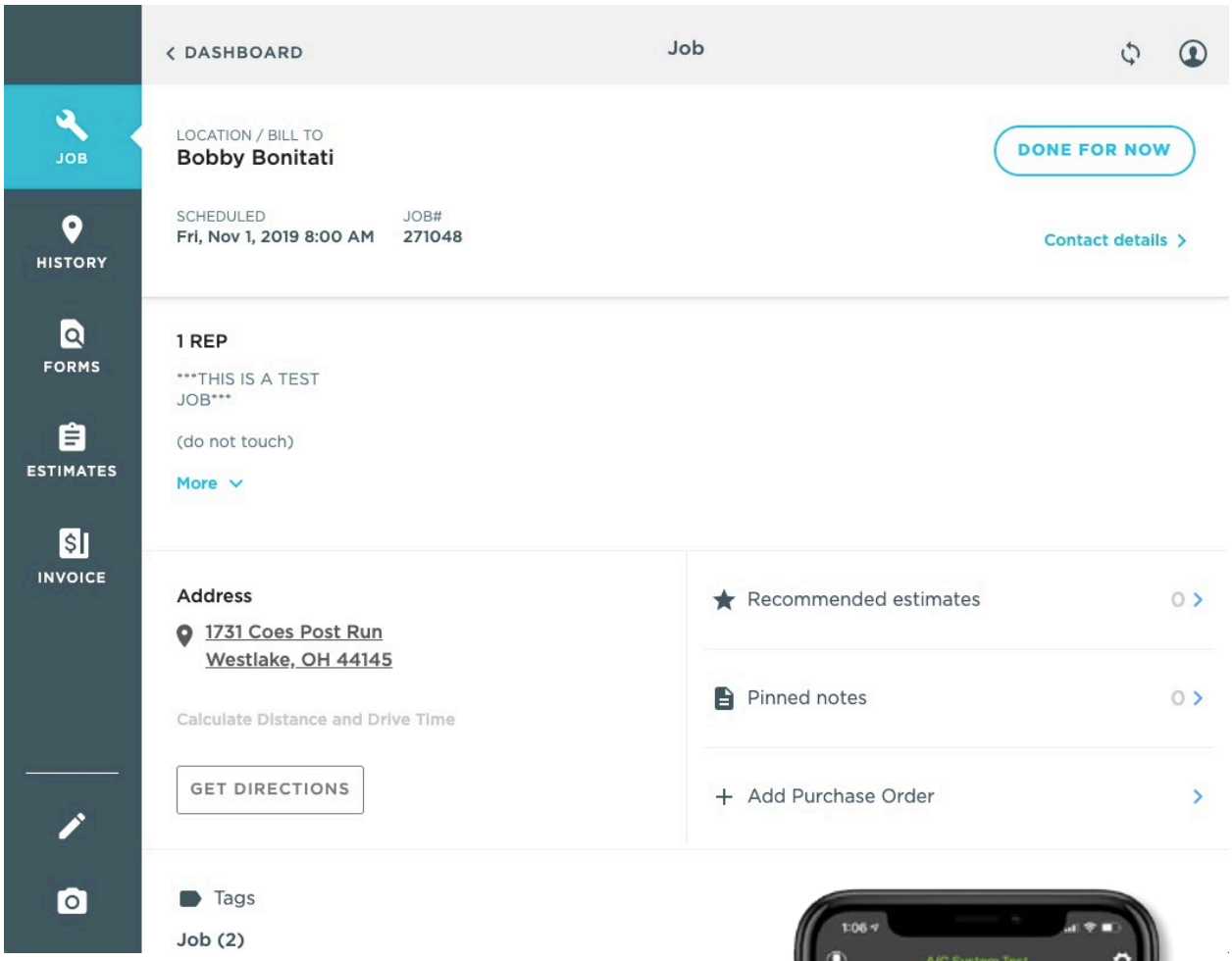
NOTE: If the mQ HVAC app is open for a user during this process, please have the user restart their mQ HVAC app for it to associate with ServiceTitan or go to the top left Account Page on the Home tab and tap on "Refresh Account Info".

Using measureQuick HVAC Mobile App with ServiceTitan integration

1.) In ServiceTitan, assign a job to a user and change the status to "Working" by clicking **Arrive** and **Yes.**

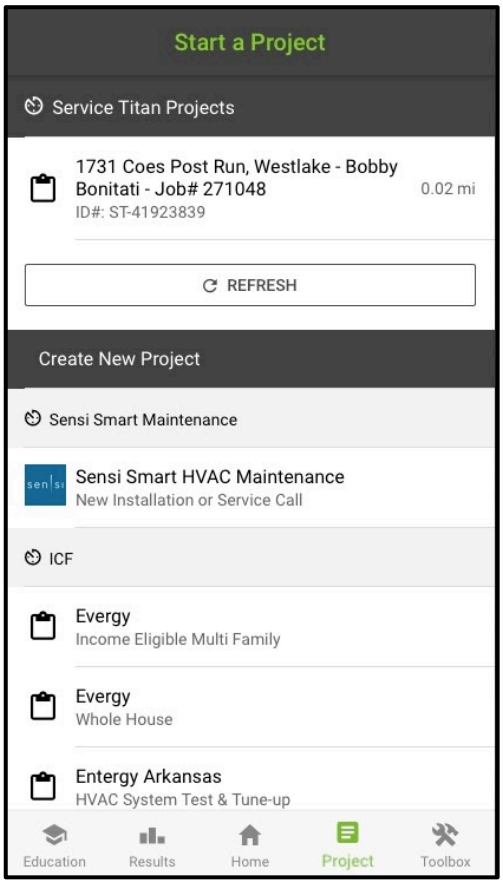




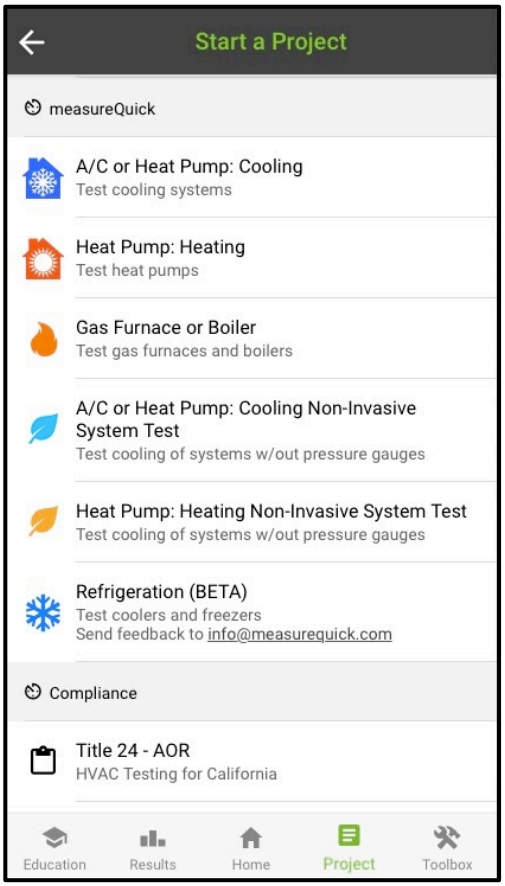


2.) Open up the mQ HVAC app and click the “Project” button on the Application Navigation
3.) A list of ServiceTitan projects that have been assigned to the tech that is logged in to mQ and is marked “Dispatched” or “Working” shows at the top of this view ordered by distance.

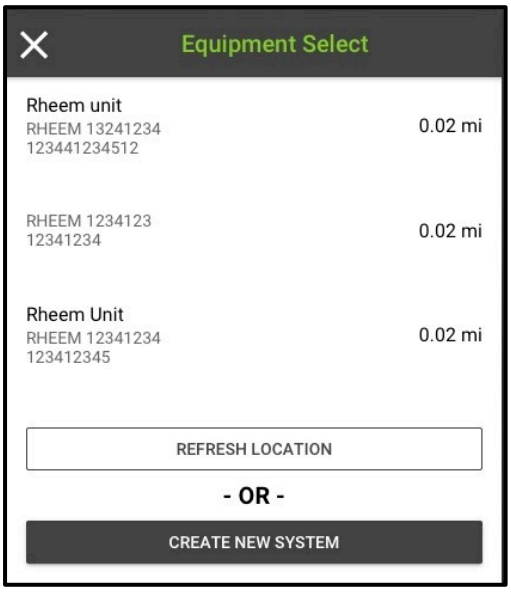
4.) Choose the project you wish to work on.



5.) Choose the type of mQ project you wish to perform

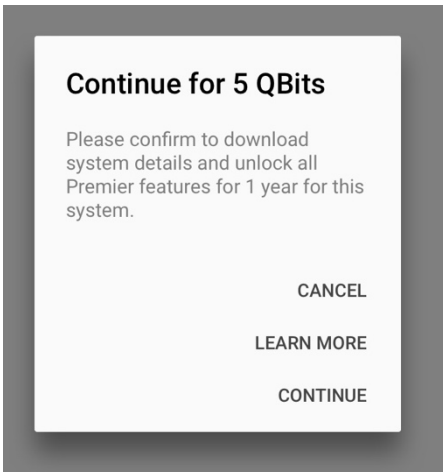


6.) Select the equipment you wish to work on (if previously saved to measureQuick) OR “Create New System”



7.) Accept the fee of 5 QBits to unlock the system and all Premier features by tapping “Continue”

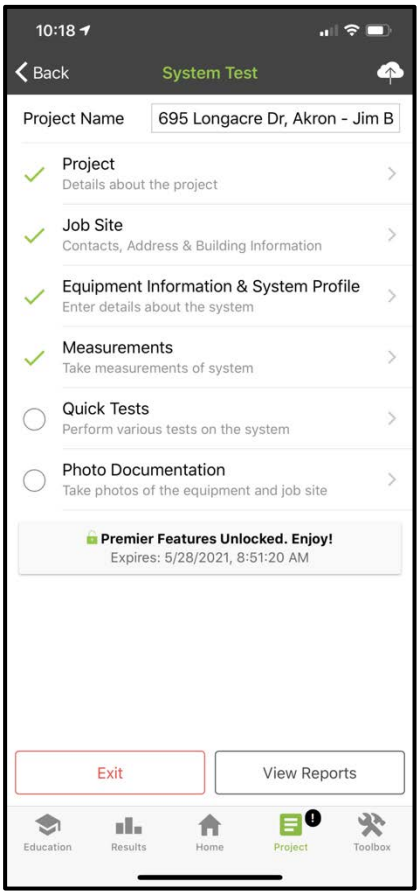
NOTE: The system will remain unlocked for the next 365 days, so unlimited additional projects can be made to service this equipment.



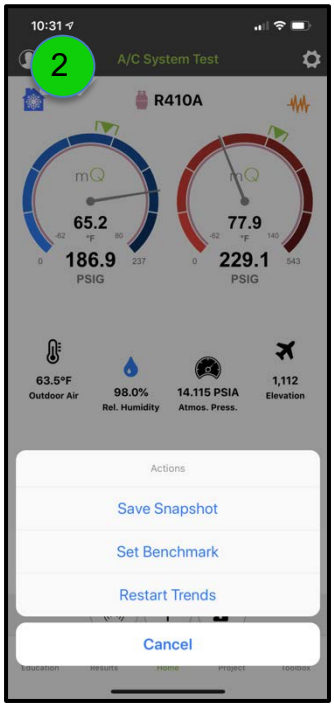
8.) A pre-populated mQ project is created

9.) Finish gathering data and taking system measurements

10.) Tap the “Save to Cloud” icon on the top right to save data to the cloud and send the most recently generated PDF to the job on ServiceTitan. Alternatively, you can “Exit & Sync” the project by choosing that option when leaving the project



Alternative method of saving PDF to ServiceTitan



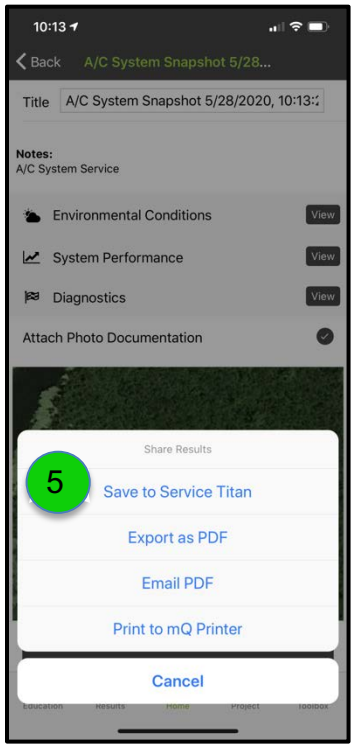
11.) From the Home screen, Tap the "+" Action button

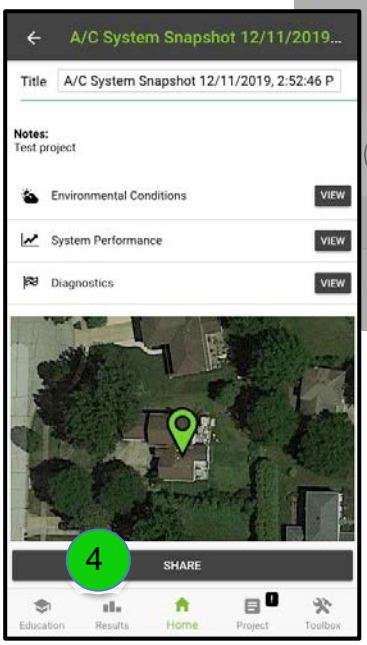
12.) Tap "Save Snapshot" to save the current set of data

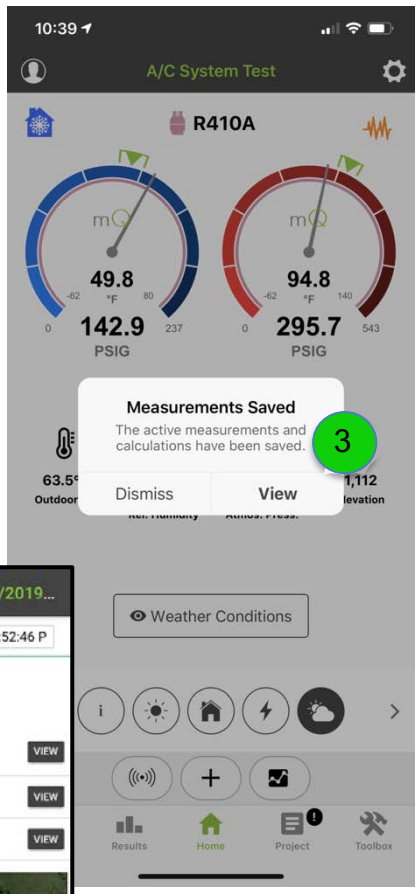
13.) Tap "View" to view the test results

14.) On the test view page, tap "SHARE"

15.) Choose the "Save to ServiceTitan" option

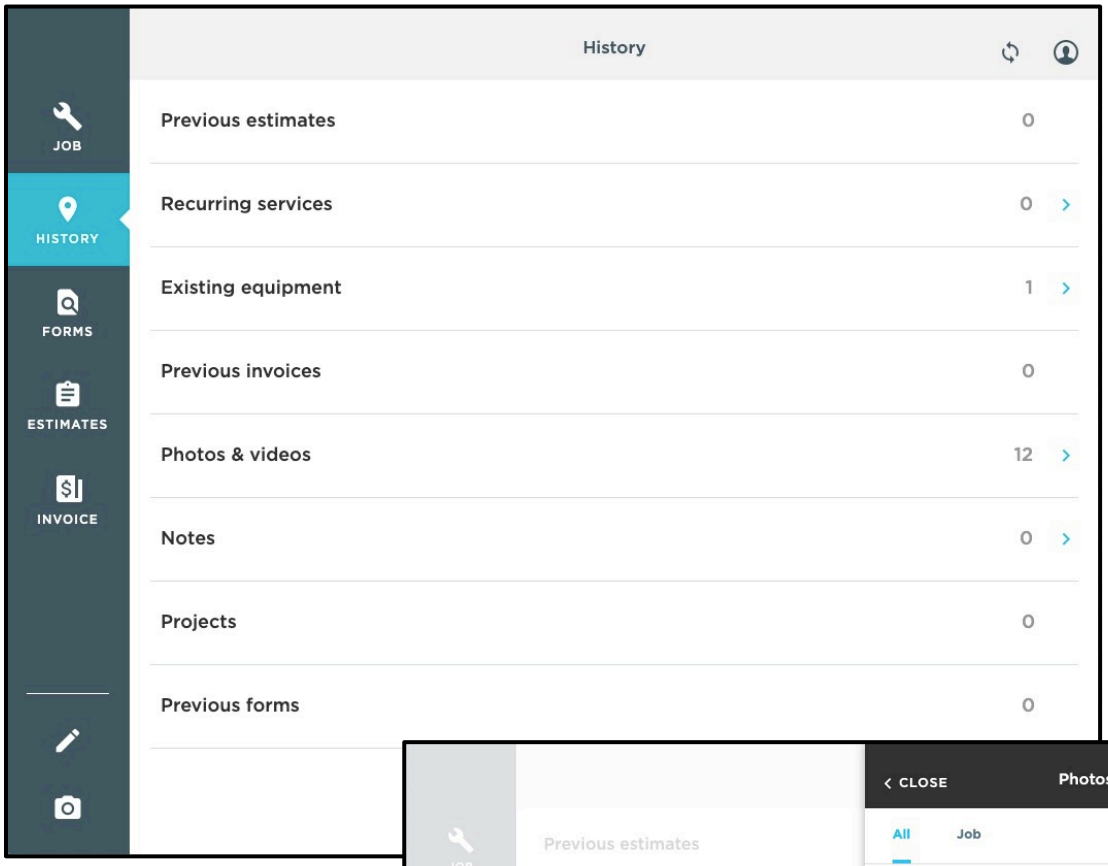




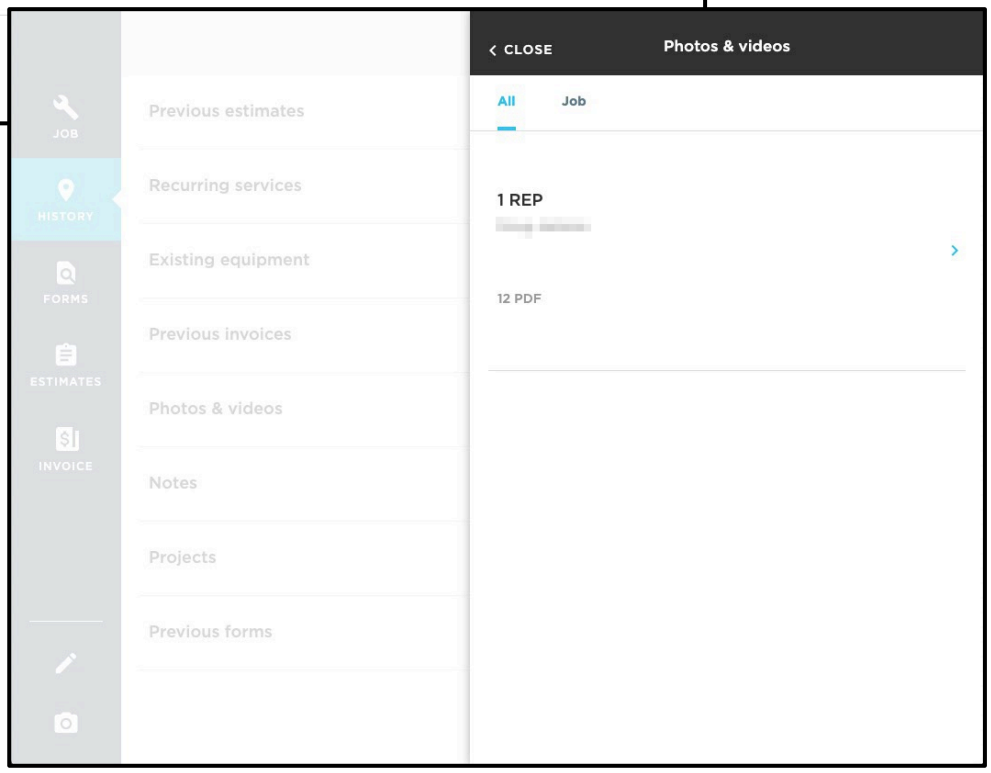


Viewing Reports Sent to ServiceTitan

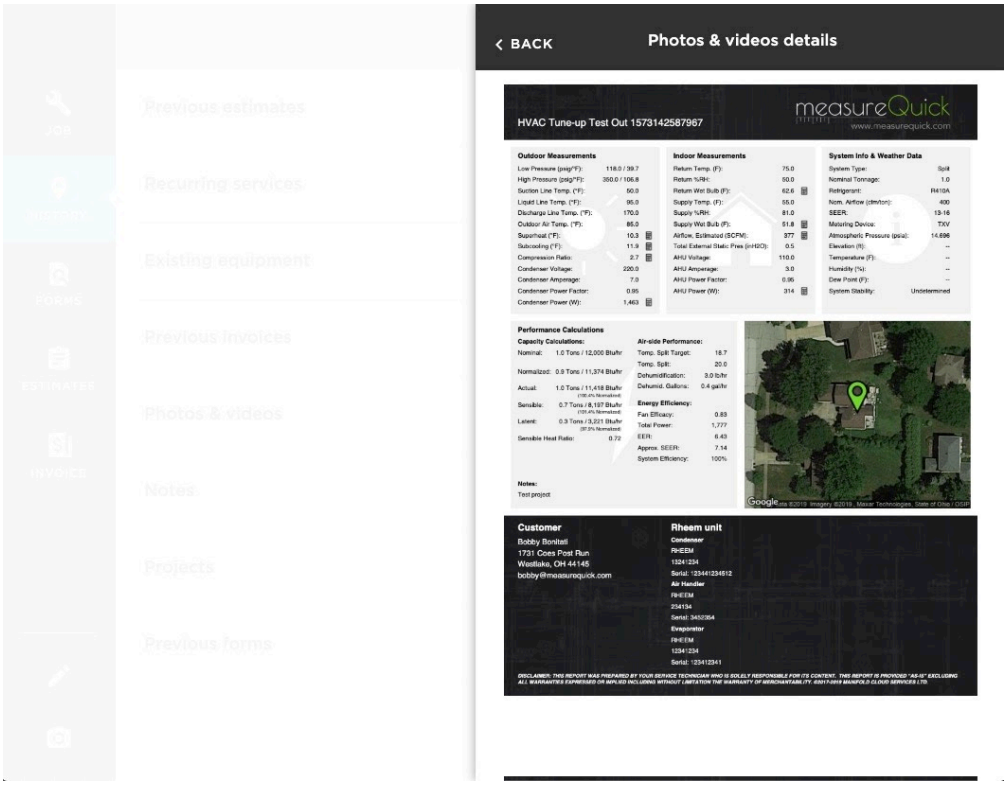
1. On the job that was selected in measureQuick HVAC, click “History” on the left menu, and tap the “Sync Changes” button next to the user profile to assure the ServiceTitan record is up to date.



2. Click “Photos & videos” then click the “PDF” text.



3. View any saved PDF's that were saved to the job.



Cloud Storage

Saving projects and storing projects to the cloud is free. Only get charged when projects are pulled from the cloud. You can view saved projects by going to virtuoso.measureQuick.com and clicking "Projects" in the left side navigation menu. Projects will also populate in the field when the technician is .25 miles from the site the project was created.