



Medical Equipment Management Information System (MEMIS)

USER GUIDE: Version one

Pharmaceutical and Medical Equipment Directorate

**Addis Ababa, Ethiopia
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ABOUT MEMIS

Medical Equipment Management system (MEMIS) is designed by Pharmaceutical and Medical Equipment Directorate (PMED) and Health Information Technology Directorate (HITD) for the systematic record-keeping system of medical equipment information which can help to manage medical equipment assets in the health facility. The software is simple and user friendly that help to establish precise management of medical equipment at national, regional and health facilities level. The system is interconnected between ministry of health, regional health bureaus, and health facilities.

MEMIS is an application software tool for Registering, Requesting and analyzing Report of installation, inventory, maintenance, request, disposal and other related information of medical equipment. MEMIS have auto filling parameters, radio buttons, drop down lists, searchable engines and have selectable report analyzing tool. The MEMIS consists of Dashboard, Registration, Setting, Request, Report modules, users, setting, alert alarm and each modules have its own parameters and setups.

The web-based MEMIS setting module defined settings for uniformity name and report style at the level of the facility and organization. The system provides user privileges for each levels to access their specific hospital information. The hospital can't access other hospital information as well as the regional health bureaus also access their hospitals which found only in the region. The system have dashboard which display alert alarm which indicates the request, the statues, standard and preventive maintenance of medical equipment in their specific health facility , total health facility in the region and total hospital in the ministry level. The system also consists of exporting and importing mechanism for easily use the data and either printing in PDF, Excel and other formats

Generally, the system provides information exchange regarding medical equipment statues, report and request between health facilities, regional health bureaus and ministry of health. The user guide presents an overview of the application's features and gives step-by-steps instructions for completing a variety of tasks in the MEMIS modules.

HARDWARE AND SOFTWARE REQUIREMENTS

The following requirements apply to all installations:

Components	Requirement
.NET Framework	More than .NET Framework 4.6
Network Software	support the network protocols like TCP/IP
Hard Disk	More than 500GB
Processor	Corei5 and more 2.50 GHz or faster
RAM	4GB and more
Operating Systems	64-bit Windows

USER GUIDE

Basically this web-based application has three major module: registration, requesting and reporting. A users are also classified in to three hierarchical level and authorized to interact with the system indifferent privilege levels. User's level are: MoH-administrative users, regional admins users and facility level technical users.

USER ACCESS LEVELS

1. MoH-Admin
2. Regional Admins
3. Facility level-Biomedical Head
4. Facility Department

ROLE OF USERS

MoH-Admins

- Change password
- Add/Remove users to the system at region and facility level users.
- Add documents/remove to and from system
- Edit tables information via setting

- View report as a national medical equipment information
- View different request and act

Regional Admins

- Change password
- Provide access to hospitals biomedical heads
- **Dashboard view**:- Regional medical equipment functionality and availability of equipment vs standard
- **Logistic**:- Medical equipment issued and received region respective
- Access to medical equipment specification
- **Registration**: Equipment registration information, Register equipment inventory, maintenance work, training work registration
- **Requesting**:

Prepare request for MoH-admin and view and respond sent from facilities for

1. Procurement
2. Training
3. Installation
4. Specification
5. Maintenance
6. Calibration

- **Report**:

Access report from facilities on:

1. Equipment inventory report
2. Equipment training
3. Equipment maintenance
4. spare-part availability
5. Disposal

Facility level-Biomedical head

- Change password respective

- **Dashboard view:**
 1. Hospital respective functionality
 2. Hospital respective standard equipment availability
 3. Available equipment department based
 4. Spare-part availability
 5. Preventive maintenance program
- Add biomedical engineer users/Department level user
- Access information for logistic received and issued as store manager
- Access equipment specification
- **Registration:**
 1. Equipment registration
 2. Inventory registration
 3. Model equipment list updating
 4. Register maintenance
 5. Maintenance work order assigning
 6. Equipment training
- **Request:**
 1. Create procurement request
 2. Create specification request
 3. Create and process training request
 4. Create and process installation request
 5. Create and process maintenance request
 6. Create and process calibration request
 7. Create and process disposal request
- **Report:**
 1. Create report about equipment
 2. Access training data on equipment
 3. Access maintenance registered
 4. Availability of equipment spare-part
 5. Access disposal equipment

Department level user

- Change password
- View equipment functionality department based
- Access equipment specification
- **Request:**
 1. Create maintenance request
 2. Create training request
 3. Create calibration request
 4. Create disposal request

DATA FLOW DIAGRAM

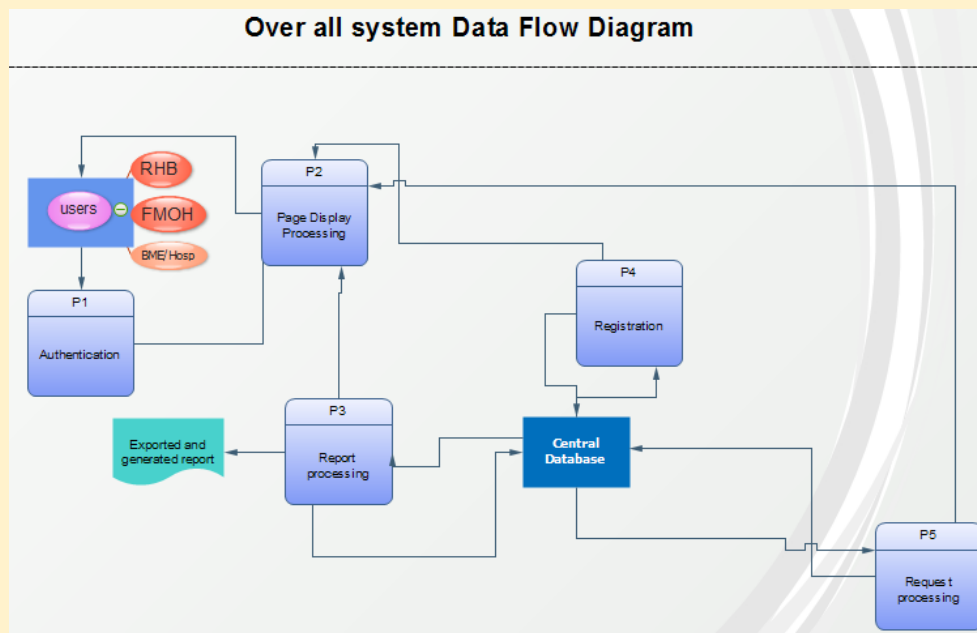


Figure: Data flow diagram

GETTING STARTED

1. Obtain web-link, user name and pass-word from the system admins

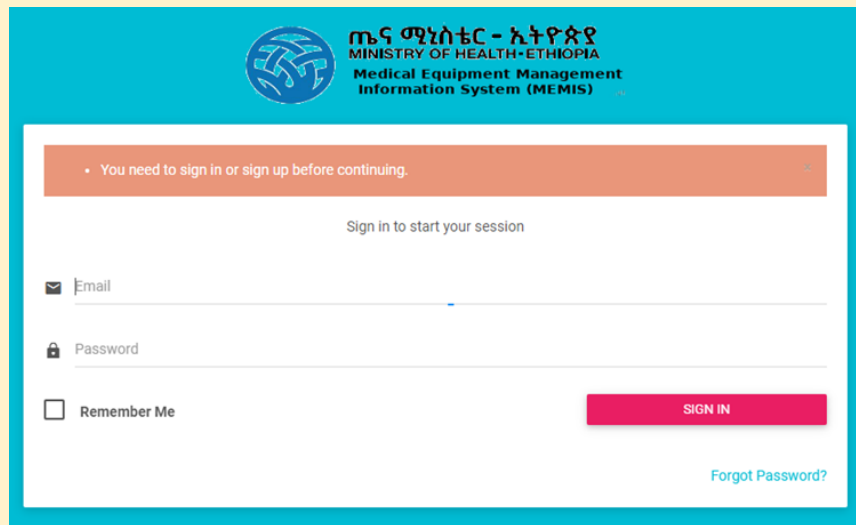


Figure: log in form

2. Use any arbitrary browser paste the link or double click it will bring the getting started page as shown above insert your given email/password click the sign button and get started.

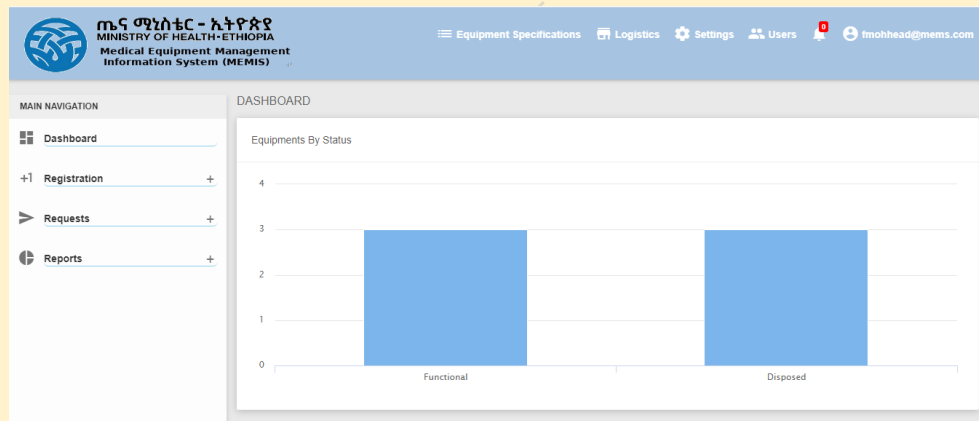


Figure: Instant view by MoH-admins after completing getting started

By selecting the needed icon you can view report from the dashboard instantly. See notification for request and updates.

Change password

1. Use create your own password an user name for more security
2. After you signed in click the username to sign-out or change password choices

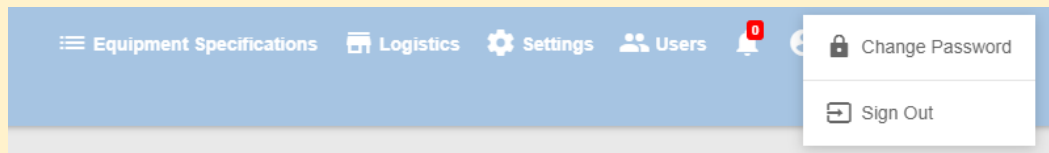


Figure: change password and sign-out

3. Follow the instruction from the system to accomplish

The image shows a 'Change Password' form. It has three input fields: 'New Password', 'Confirm Password', and 'Current Password'. Below the fields is a 'Change' button.

Figure: change password form

Add user

1. Go to users on the first page
2. Select region/hospital/department (specific)

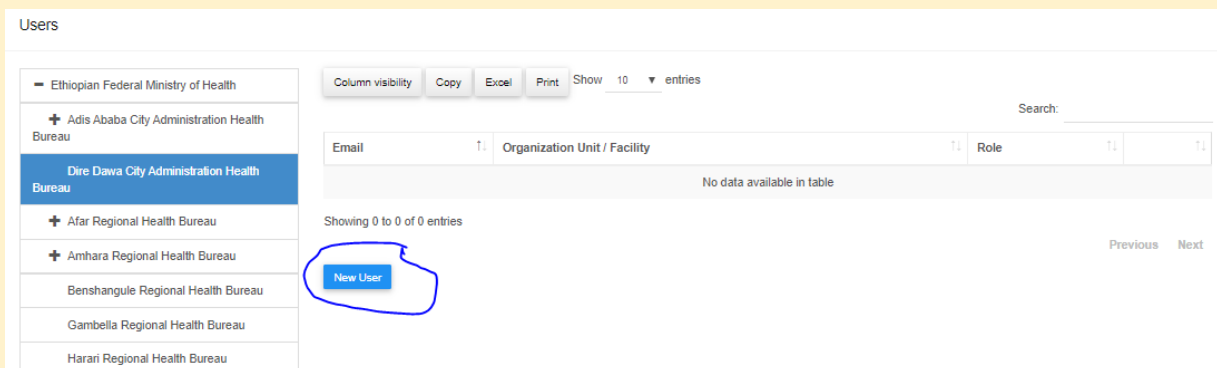


Figure: Sample new user adding

4. Fill the required information's including email, and password, the selected role will limit the privilege

Figure: sample new user information

Uploading specification

1. Select the equipment specification from menu bar
2. Got to register specification

Equipment name	Facility TYPe	Department	
Analyzer - Blood Gas	Tertiary Hospital	Laboratory	Details
Analyzer - CD4	Health Center	Laboratory	Details
Analyzer - CD4	Tertiary Hospital	Laboratory	Details
Analyzer - CD4	Primary Hospital	Laboratory	Details
Analyzer - Clinical Chemistry,	Health Center	Laboratory	Details
Analyzer - Clinical Chemistry,	Tertiary Hospital	Laboratory	Details
Analyzer - Clinical Chemistry,	Primary Hospital	Laboratory	Details
Analyzer - Coagulation	Tertiary Hospital	Laboratory	Details
Analyzer - Elisa	Tertiary Hospital	Laboratory	Details
Analyzer - Hematology, 5 Differential	Tertiary Hospital	Laboratory	Details

Showing 1 to 10 of 128 entries

Previous [1](#) [2](#) [3](#) [4](#) [5](#) ... [13](#) Next

[Register Specification](#)

Figure: Sample registering new specification

3. Fill the necessary descriptive data about the specification
4. Copy and paste the specification from the document
5. Click create specification
6. Complete the process

The screenshot shows the 'Register Specification' form in the MEMIS system. The form has three dropdown menus: 'Equipment name', 'Department', and 'Organization unit type'. Below these is a 'Create Specification' button, which is circled in blue. The interface also includes a main navigation menu on the left and a header with the Ministry of Health logo and system name.

Figure: New specification information

Search/detail view for documents

Search

Equipment Specifications

Column visibility Copy Excel Print Show 10 entries

Search: monitor

Equipment name	Facility Type	Department	
Monitor - Patient	Tertiary Hospital	ICU	Details
Monitor - Patient	Primary Hospital	ICU	Details
Monitor - Patient, Central	Tertiary Hospital	ICU	Details
Monitor-Fetal	Tertiary Hospital	MCH	Details

Showing 1 to 4 of 4 entries (filtered from 128 total entries)

Previous 1 Next

Detail

Specification Details		
Equipment Name:	Analyzer - Blood Gas	Item Detail
Facility Type:	Tertiary Hospital	1. Generic Name: Analyzer - Blood Gas
Department:	Laboratory	2. GMDN/UMDN Code/Name: 3. Clinical Purpose/ Description: Blood gas analyzers are used to measure blood gases , electrolytes , Ph values, concentrations of lactate, hemoglobin, several electrolytes, oxyhemoglobin, carboxyhemoglobin, and methemoglobin and other biochemical parameters of the blood 4. Technical Specification: Compact design, light weight Fully automatic, upgradeable, fast electrolyte analyzer Essential Measured parameters; pH, pCO2, pO2, tHb, Barometric Pressure, Na+, K+, Ca++, Cl-, Bood urea and Sr Creatanine & Blood sugar. All these parameters should be measured simultaneously Calculated parameters should include BE, BE ecf, HCO3, Lactate, Anion Gap, SaO2 etc Sample volume: <100ul. Result should be available: < 45 sec Maintenance free electrodes with individual electrodes ON/OFF facility Fully automatic liquid calibration of all parameters at user-defined intervals without the use of Gas calibrated reagents, external gases, tanks or regulators Continuous reagent level monitoring with graphic display.

Figure: specification detail

View logistics

1. After you signed in you will see a button for logistics click on it.
2. Instantly you will have two choices received items and issued item report

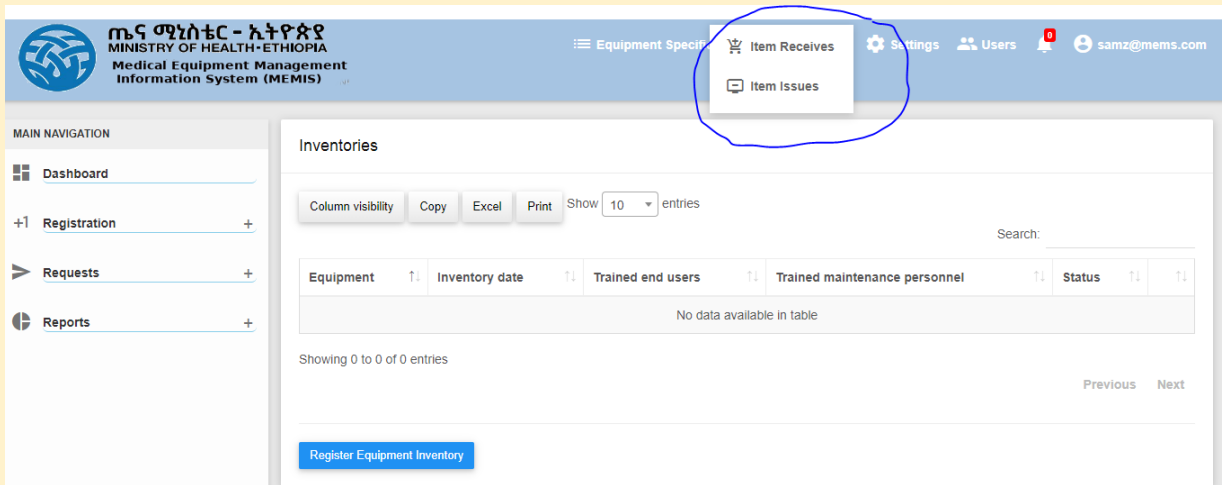


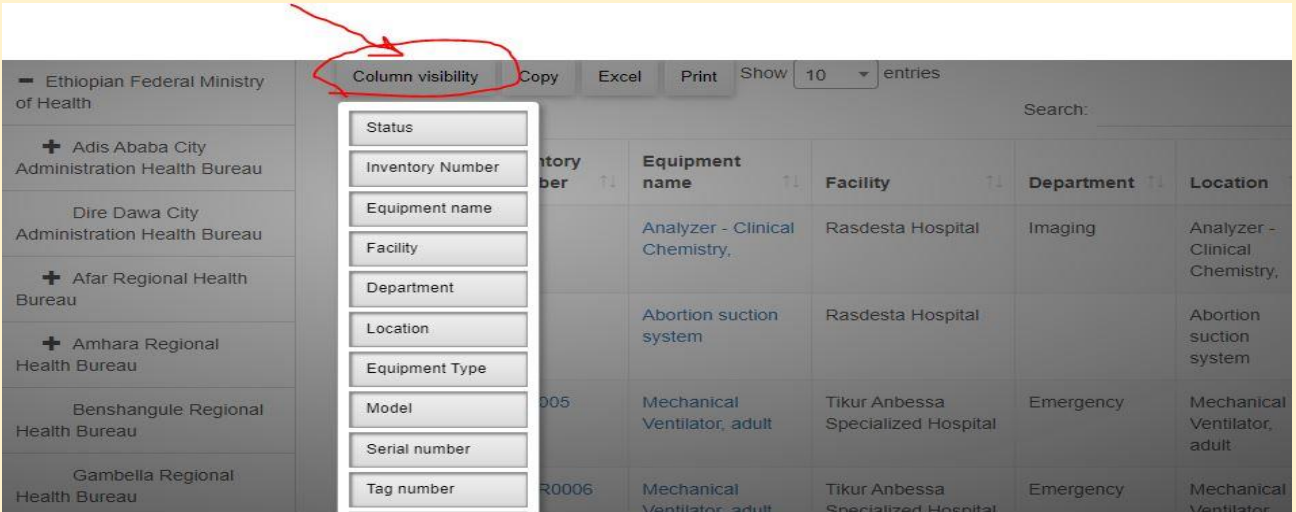
Figure 8: view logistics

Item receiving form

The screenshot shows the 'New Receiving Form' in the MEMIS system. The top navigation bar includes 'Equipment Specifications', 'Logistics', 'Settings', 'Users', and a user profile. The left sidebar contains 'Dashboard', 'Registration', 'Requests', and 'Reports'. The main content area features a form with the following fields: 'Store' (dropdown), 'Reference number', 'Delivered By', 'Received By', 'Delivery Date', and 'Note'. Below the form, there are two radio buttons: 'Equipment' (selected) and 'Spare Parts/Accessories'. At the bottom, there is a table with columns: 'Equipment Name', 'Model', 'Description', 'Quantity', and 'Unit Cost'. An 'Add Equipment' button is located below the table and is circled in blue.

Sample form for item receiving

View column visibility



Click on the parameters you want to see on the data grid views

Change Setting

1. From the instant view after sign-in you have setting button at the top
2. Click on it and you will have 11 choices
3. Select one on your interest

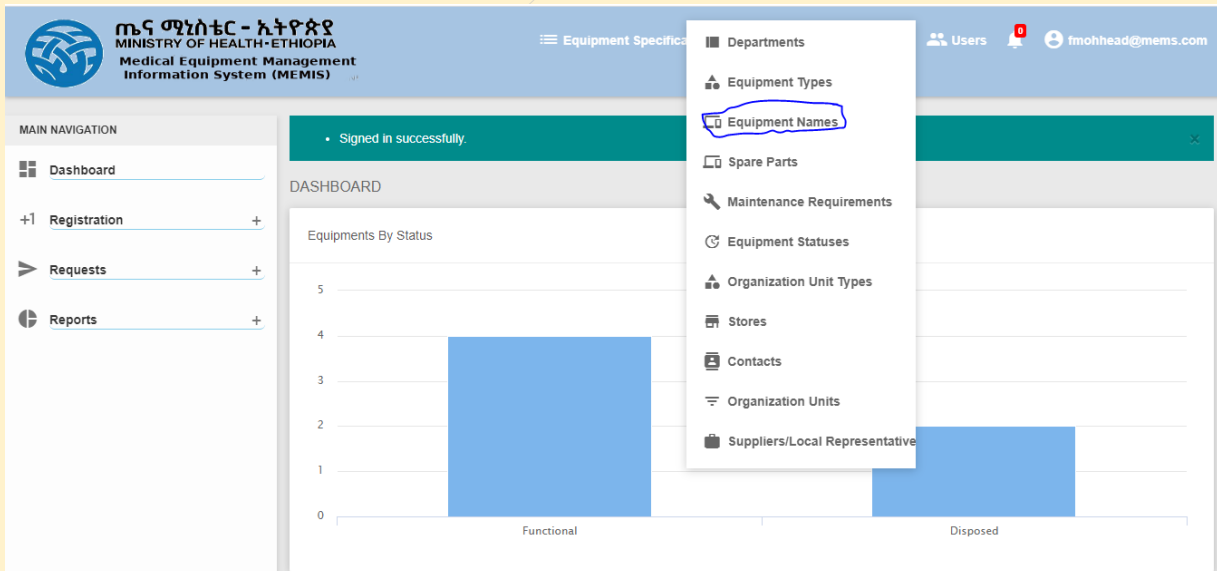


Figure 9: updating tables under setting

- Let say you have selected the equipment name you will able to add or remove name of equipment used while registering them from the facility

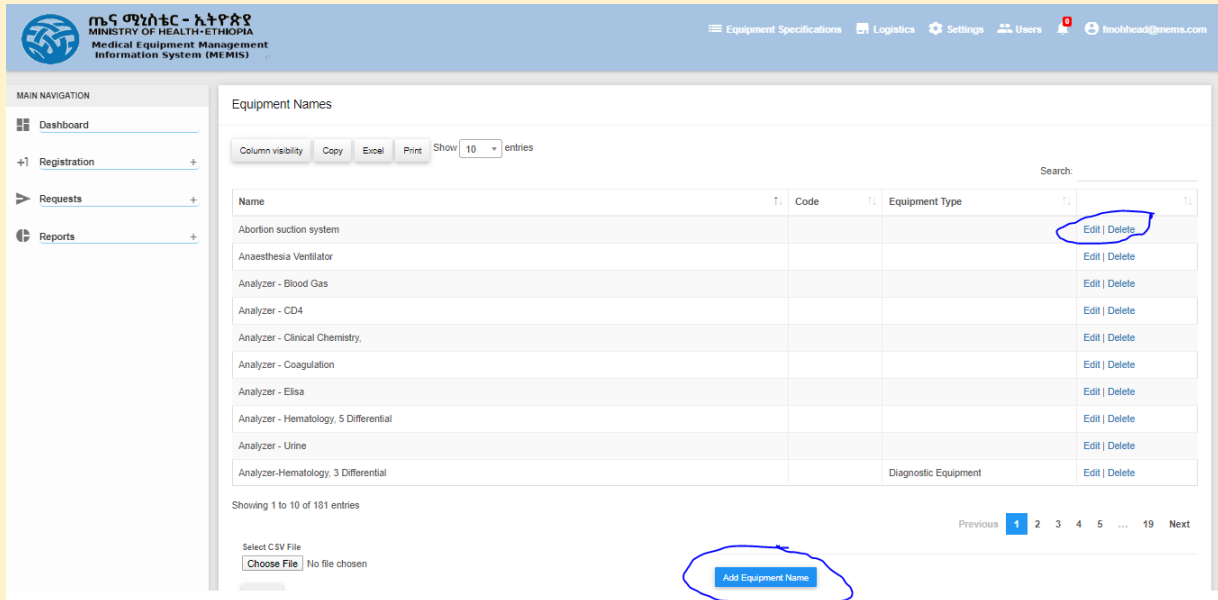


Figure 10: Sample setting edit/delete for equipment type

NAVIGATE IN MAIN MENU

Dash board privilege specific

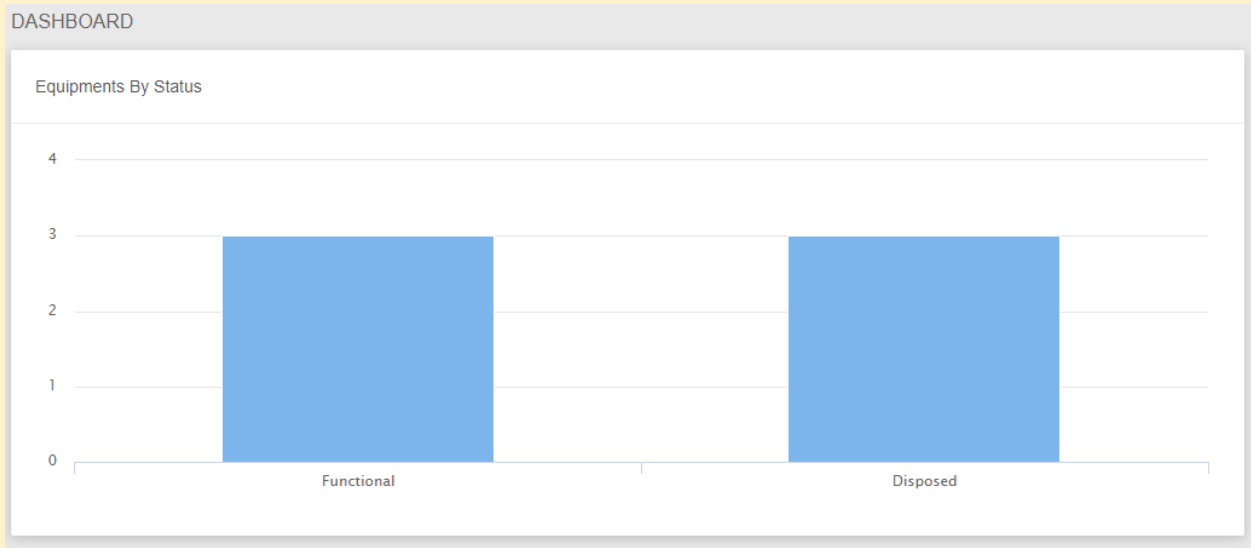


Figure 11: Dashboard view for functionality of equipment across the nation MoH-Admin

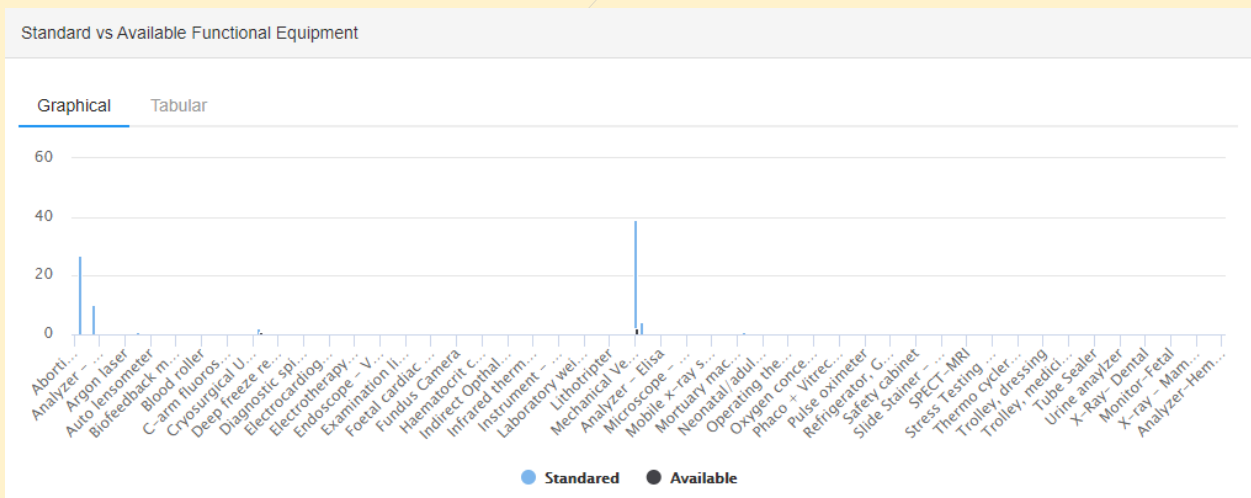


Figure 12: Avalaiablity of medical equipment view nation wide

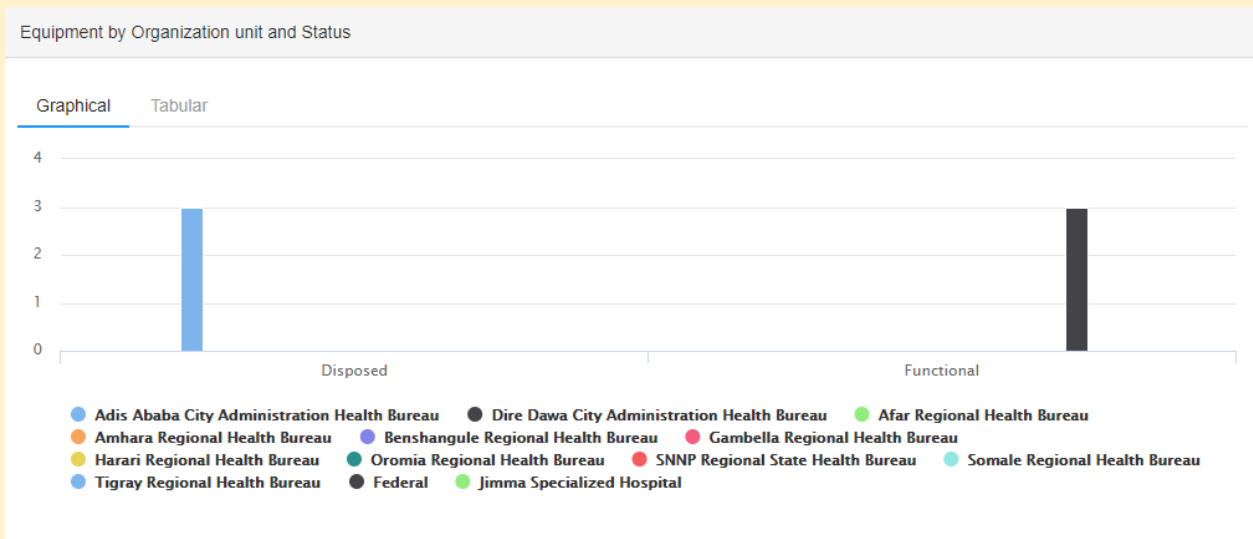


Figure 13: Equipment by organization unit and status view nation-wide with regions

Preventive maintenance schedule (facility user)

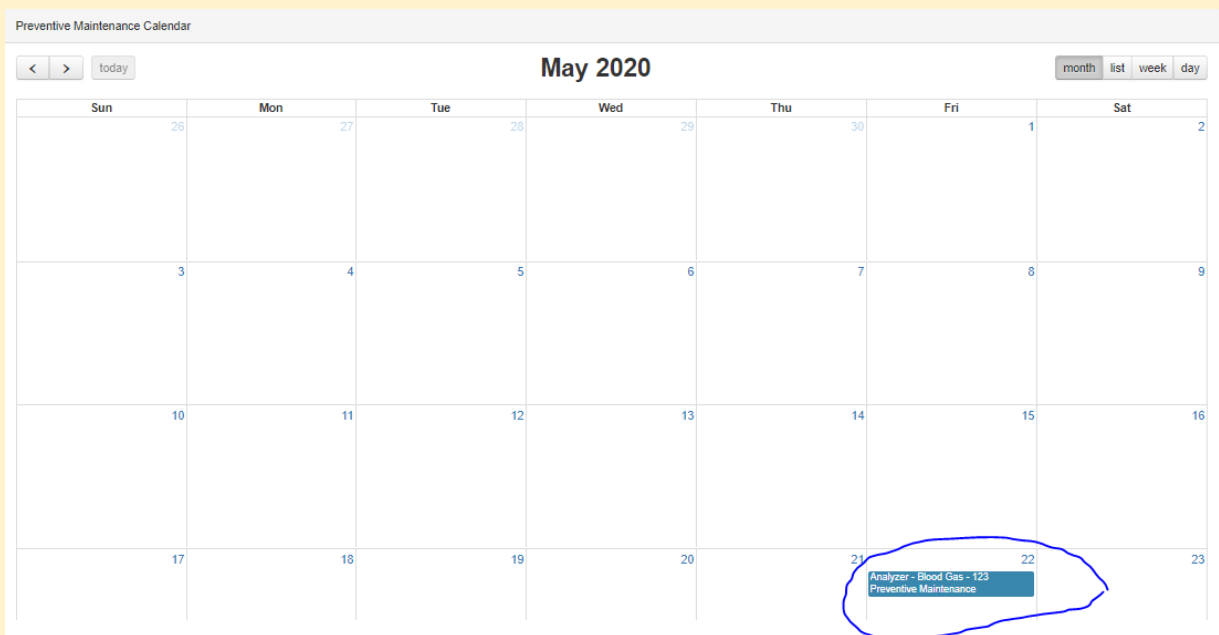


Figure: Preventive maintenance schedule view

REGISTRATION

By clicking in the registration button you can view medical equipment information from regions and facilities within the regions

Equipment List

Ethiopian Federal Ministry of Health

Column visibility Copy Excel Print Show 10 entries

Facility	Inventory Number	Equipment name	Equipment Type	Model	Status	
Rasdesta Hospital		Abortion suction system		3rerfe	Disposed	Details
Rasdesta Hospital	45	Analyzer - Clinical Chemistry	Treatment equipment	erdr	Disposed	Details
Rasdesta Hospital	123	Analyzer - Blood Gas	Diagnostic Equipment	3rerfe	Functional	Details
Tikur Anbessa Specialized Hospital	EMR005	Mechanical Ventilator, adult	Life support equipment	Shangrila 590p	Functional	Details
Tikur Anbessa Specialized Hospital	EMER006	Mechanical Ventilator, adult	Life support equipment	sv300	Functional	Details
Tikur Anbessa Specialized Hospital	IMAG0008	CT Scan Machine	Diagnostic Equipment	Optima CT660	Functional	Details

Showing 1 to 6 of 6 entries

Previous 1 Next

Figure 14: registered equipment view by region and respective hospitals

Equipment Registration

1. Go to the navigation main and click equipment registration

Equipment List

Adis Ababa City Administration Health Bureau

Column visibility Copy Excel Print Show 10 entries

Facility	Inventory Number	Equipment name	Equipment Type	Model	Status	
Rasdesta Hospital	123	Analyzer - Blood Gas	Diagnostic Equipment	3rerfe	Disposed	Details
Rasdesta Hospital		Abortion suction system		3rerfe	Disposed	Details
Rasdesta Hospital	45	Analyzer - Clinical Chemistry	Treatment equipment	erdr	Disposed	Details

Showing 1 to 3 of 3 entries

Previous 1 Next

Figure 21: Registering new equipment facility level view

2. Select from the drop down menu equipment inventory to create inventory for your facility

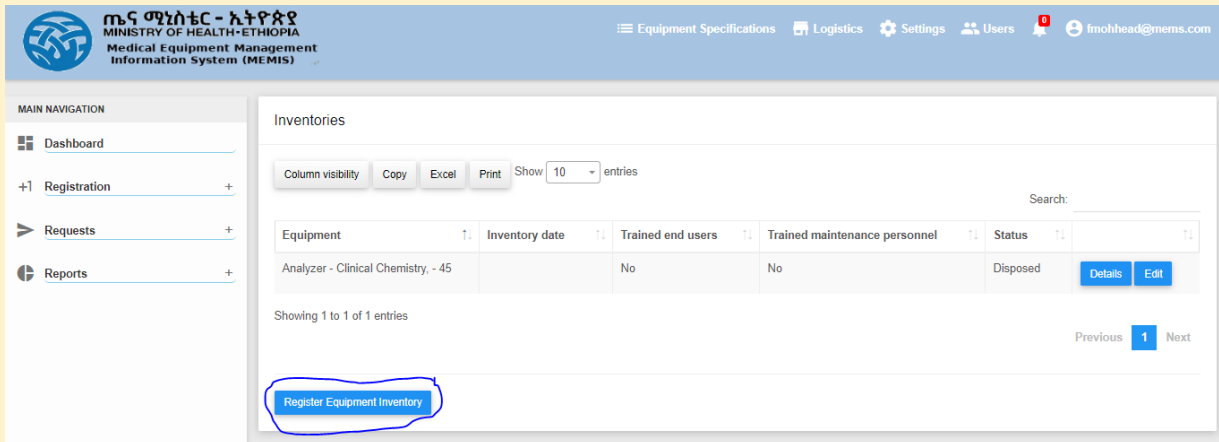


Figure 22: Inventory creating sheet view

3. Select register equipment inventory to create your facility inventory and complete by create inventory button

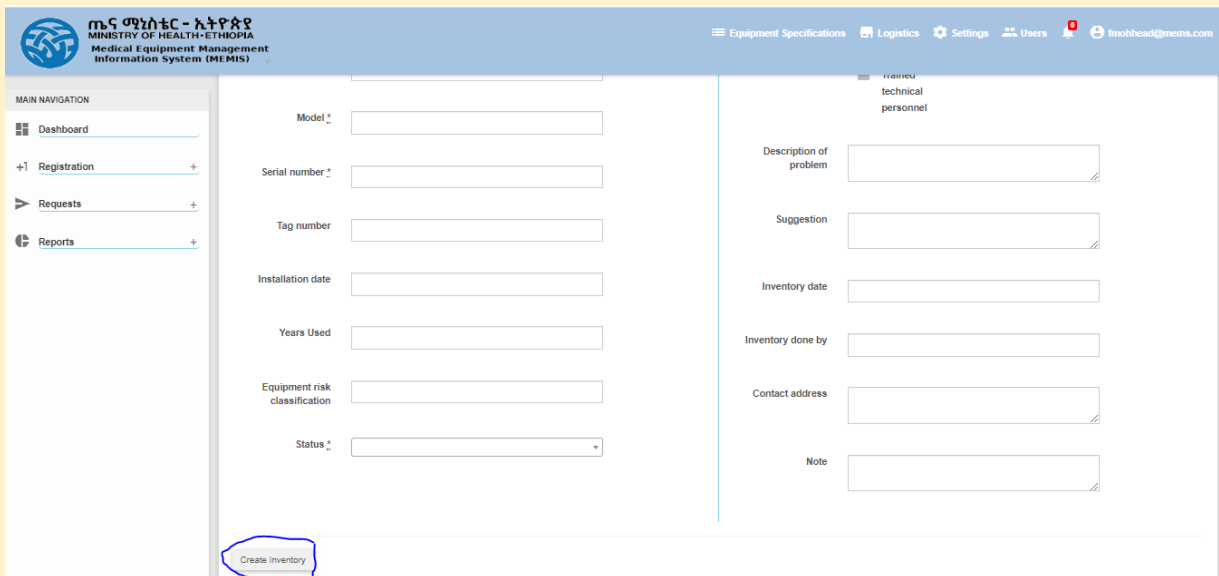


Figure 23: Inventory data filling sheet

Tips: To register maintenance, maintenance work orders, and equipment trainings follow the same procedure as the equipment inventory registration.

CREATE AND VIEW REQUEST

By clicking in the request button you can view different request from regions and facilities within the regions

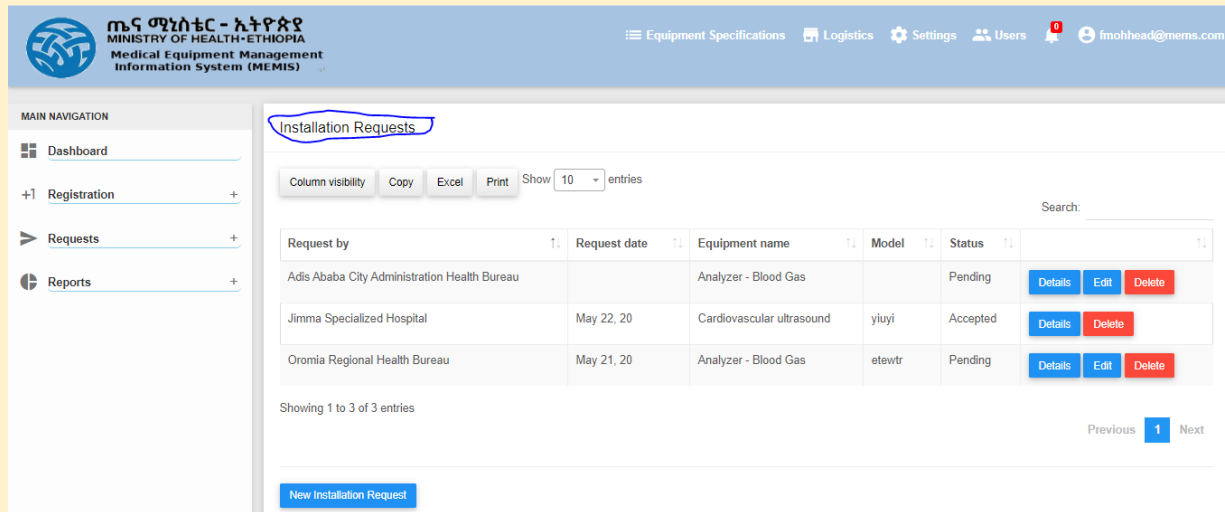


Figure 14: Requested installation view

Create request (ex: creating training request)

7. Click training request
8. Use new training request

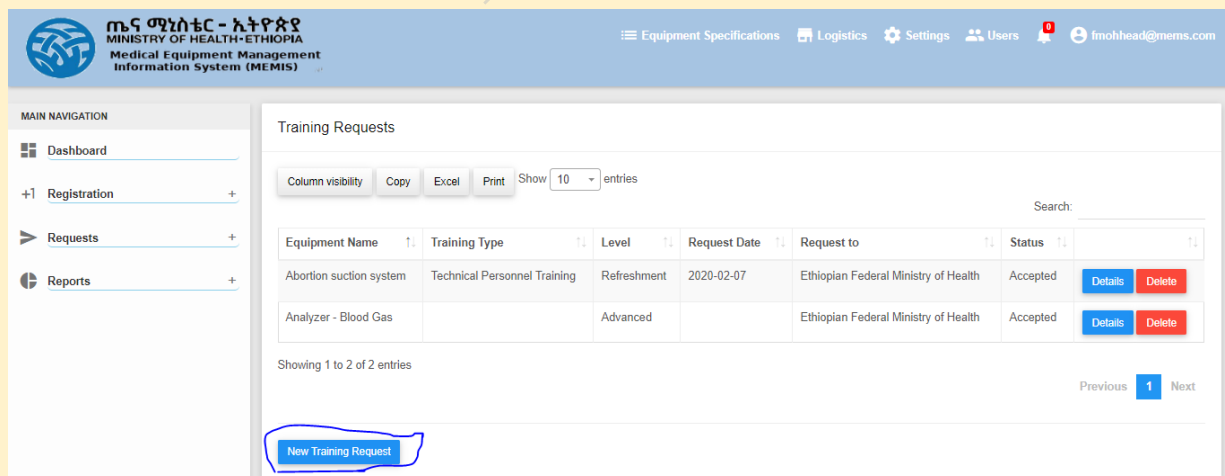


Figure: New training request form

9. Use the button create training request after filling the information

New Training Request

Equipment name *

Request date

Trainee type End User Training
 Technical Personnel Training

Level Basic
 Advanced
 Refreshment

Training description

Attachment No file chosen

Tip: follow the same step to create other request types available in the options.

To view requested services you can use the bell notification button.

Figure: Request view options

REPORT

1. To access reports just go to main navigation buttons and select report.

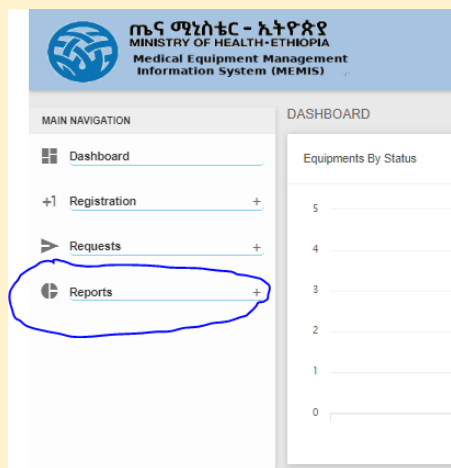


Figure: report button navigation main

2. Select your interest of report type (example; equipment training report)

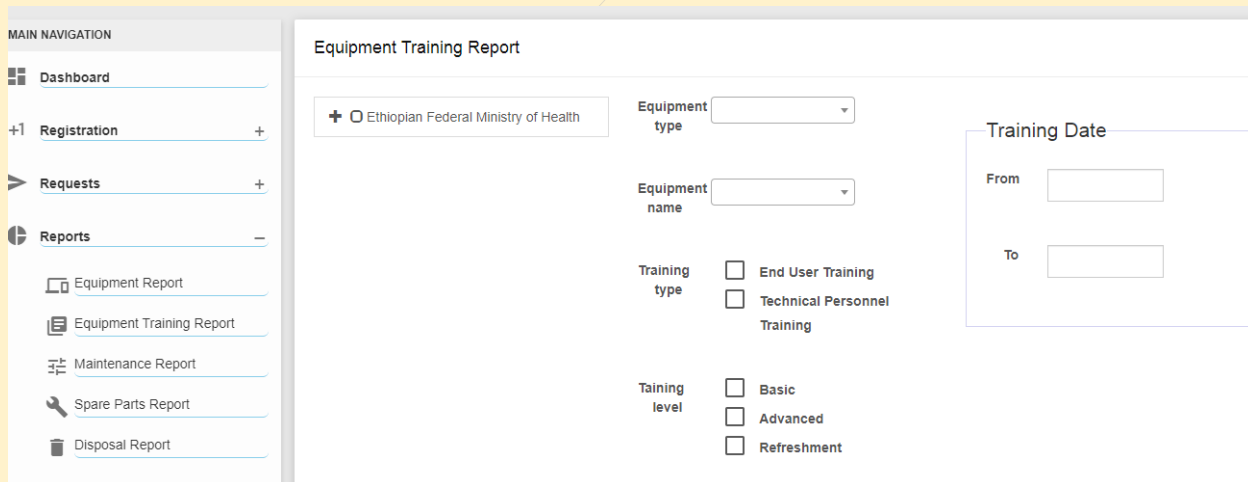
The image shows the 'Equipment Training Report' form. The left sidebar contains a 'MAIN NAVIGATION' menu with 'Reports' expanded to show sub-options: Equipment Report, Equipment Training Report, Maintenance Report, Spare Parts Report, and Disposal Report. The main form area includes: a location dropdown set to 'Ethiopian Federal Ministry of Health'; two 'Equipment' dropdowns (one for 'Equipment type' and one for 'Equipment name'); 'Training type' checkboxes for 'End User Training' and 'Technical Personnel Training'; 'Taining level' checkboxes for 'Basic', 'Advanced', and 'Refreshment'; and a 'Training Date' section with 'From' and 'To' input fields.

Figure 15: Equipment training report view

3. After selecting the form fill the information you want to see and use the search/print options to access report

The screenshot shows a web application interface for accessing a report. On the left is a 'MAIN NAVIGATION' sidebar with 'Dashboard', 'Registration', 'Requests', and 'Reports'. The main area contains a form with 'Inventory number' (00001) and 'Installation Date' (From: Friday 22 May 2020, To: Sunday 31 May 2020). Below the form are 'Reset Form' and 'Search' buttons. A toolbar includes 'Column visibility', 'Copy', 'Excel', 'Print', and 'Show 10 entries'. A table with columns 'Facility', 'Inventory Number', 'Equipment name', 'Equipment Type', 'Model', and 'Status' is shown with 'No data available in table'. The status 'Showing 0 to 0 of 0 entries' and 'Previous Next' navigation are at the bottom.

Figure: Report accessing form

Tips: use the same step to view other report types via accessing main navigation