ENTREGABLE 11

Acceso a la aplicación : https://app.energysequence.com

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Título de la especificación: MAINTENANCE MODULE

Title of the specification: Definition of maintenance page

Country: All

Specification Responsible: Jesús Martín Aguilar

Date:

Versión	Fecha
V0 (versión inicial)	7/01/2020
V1 (revisión)	17/02/2020

1. Goals of the specification

The goal of this specification is the definition of a page inside the building/installation profile to visualize the maintenance tasks related to the "type of facility" that can be photovoltaic, LED, HVAC, etc.

2.Background

This specification is given by the need of defining a technical part of EnergySequence that could afford the maintenance of facilities.

However, this part is motivated by the AEI Project, where a structuring and management of photovoltaic projects is a must in the development.

3. Description and tasks

The maintenance section or page will be located in the Building/Installation profile. In the same page, the user will be able to see a whole list for the different types of facilities that have a maintenance task.

a) Design of the basic table (main page) of maintenance page in the building profile

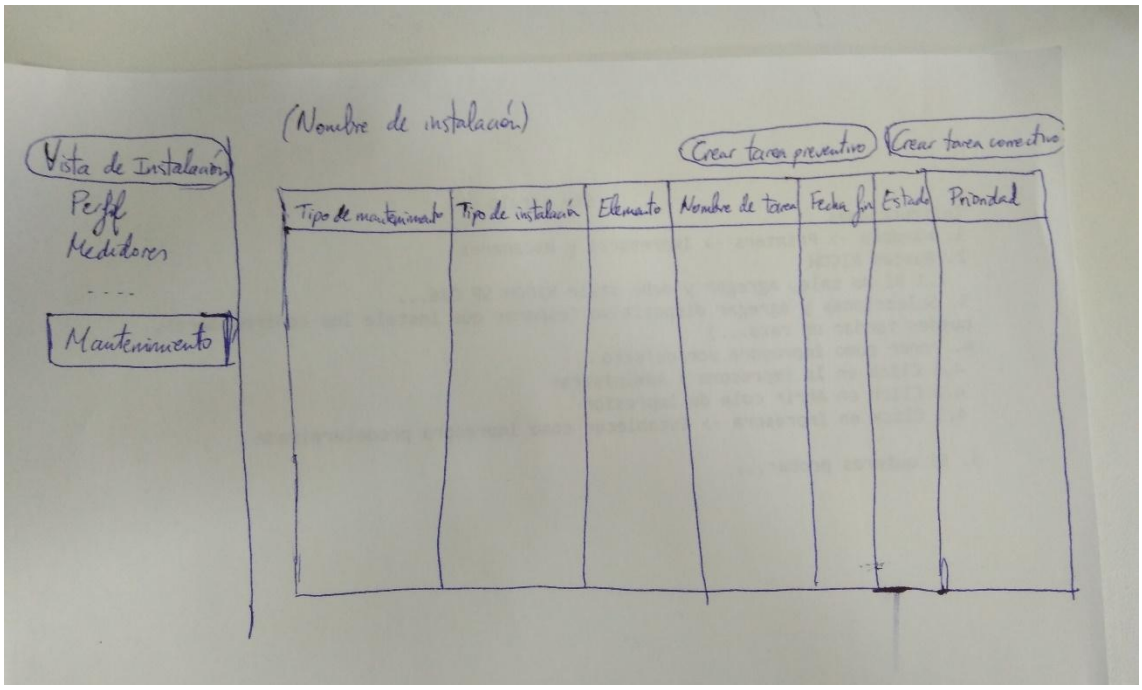
The first view of maintenance page will have a basic table that will list by rows the different tasks of maintenance to do. Although the specification is generally oriented, at this the tasks and all of that are related to Type of facility = Photovoltaic.

The columns of the table to be shown are (these properties are a part of the whole properties of a maintenance task, that are descripted in the following specifications):

- Type of maintenance
- Type of facility
- Element
- Name of the maintenance task
- Estimated end date
- Current state of the maintenance task
- Priority of the maintenance task

Each column can be ranked from the biggest to the smallest and vice versa.

The image of the main maintenance page is the following:



The name of the maintenance task will have the link to the specific view of its task (watch Design of the specific view of a maintenance task)

In the upper part of the table, there will be 2 buttons for:

- Create a preventive maintenance task
- Create a corrective maintenance task

If the user clicks on one of these buttons, the appearance of the page will change as follows in Design of the specific view of a maintenance task.

b) Design of the specific view of a maintenance task

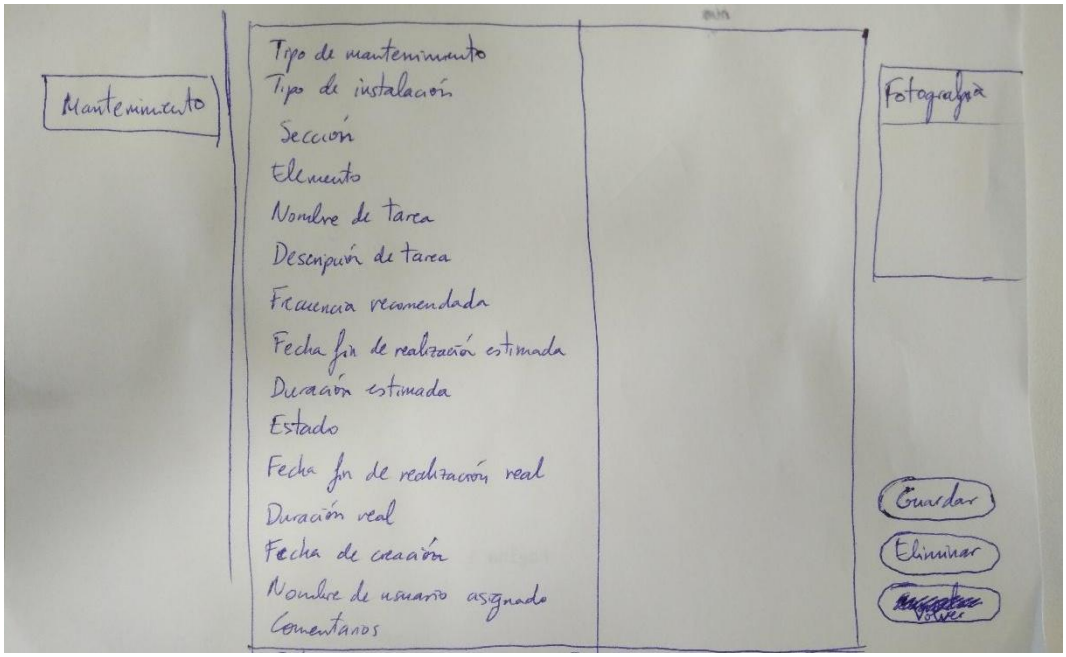
When the name of a maintenance task or a button of create a preventive/corrective maintenance task, the specific view of a maintenance task will appear in the page replacing the basic table (main page).

The specific view will contain all the properties/fields of a maintenance task:

- Type of maintenance
- Type of facility
- Section
- Element
- Name of the maintenance task
- Description of the maintenance task
- Recommended frequency (in case of preventive maintenance)
- Estimated end date
- Estimated duration
- State
- Real end date

- Real duration
- Date of creation
- Name of user of the task
- Priority of the maintenance task
- Comments
- Photography

The image of the specific view of a maintenance task is the following



In the lower part of the page there will be 3 buttons for:

- Save (changes)
- Remove (task)
- Cancel (return to the main page of maintenance)

c) Properties/fields of a maintenance task

The properties of each maintenance task will be the following:

- Type of maintenance (Tipo de mantenimiento): it is a text field and can be
  - Preventive (“Preventivo”)
  - Corrective (“Correctivo”)
- Type of facility (Tipo de instalación): it is a text field and can be
  - Photovoltaic (Fotovoltaica)
  - Lighting (Iluminación)
  - HVAC (Climatización)
  - …
  - Possible values from a database defined by staff
- Section (Sección): it is a text field and can be
  - If the type of maintenance is preventive: can be selected according to the inventory specification

    - If the type of maintenance is corrective: can be like preventive or empty
- Element (Elemento): it is a text field and can be
    - If the type of maintenance is preventive: can be selected according to the inventory specification
    - If the type of maintenance is corrective: can be like preventive or empty
- Task name (Nombre de tarea): it is a text field and can be
    - If the type of maintenance is preventive: can be selected from a list depending the Element selected
    - If the type of maintenance is corrective: can be written freely by the user
    - Possible values from a database defined by staff (in preventive case)
- Task description (Descripción de la tarea): it is a text field and can be
    - If the type of maintenance is preventive: is default from the task name but can be edited
    - If the type of maintenance is corrective: can be written freely by the user
    - Possible values from a database defined by staff (in preventive case)
- Recommended frequency (Frecuencia recomendada): it is a text field and can be
    - If If the type of maintenance is preventive: is the default from the task name
    - If the type of maintenance is corrective: it is empty
    - Possible values from a database defined by staff
- Estimated end date (Fecha fin de realización estimada): it has a date format:
    - Defined by the user (edit); can be only after to Date creation.
- Estimated duration (Duración estimada): it has a natural number format with units in “horas”:
    - If the type of maintenance is preventive: is the default from the task name
    - If the type of maintenance is corrective: it is defined by the user (edit)
    - Possible values from a database defined by staff
- Status (Estado): can be edited by the user from the following list: it is a text field:
    - “Por realizar” (default value when a task is created)
    - “En realización”
    - “En validación”
    - “Hecha”
- Real end date (Fecha fin de realización real): it has a date format:
    - It can be filled when the State is “En validación” (the default value is the day when the change of State to “En validación” is done)
- Real duration (Duración real): it has a natural number format with units in “horas”:
    - It can be filled when the State is “En validación” (the default value is the difference of days between the date when the change of State to “En validación” is done and the date of creation)
- Date of creation it has a date format:
    - It is defined by the system when a task is created (cannot be edited)
- Name of user of the task
    - It is selected in a default list by the user (it comes from the user list)
- Priority of the maintenance task: can be modified by the user in the States “Por realizar” or “En realización” and its values can be
    - “Alta”

- "Media" (por defecto cuando se crea una tarea)
- "Baja"

- Comments
  - Editable field by the user (text field)
- Photography
  - The user uploads or change the photo of the facility

d) Definition by staff of the default values in a database

The Type of facility that will be selectable is:

- Fotovoltaica
- Iluminación
- Climatización
- Punto de recarga
- Baterías de condensadores
- Variadores de frecuencia

About other default values, the following parameters will be defined by staff to be default used only for "Fotovoltaica":

Element	Task name	Task description	Recommended frequency	Estimated duration
Estructura	Comprobación de deformaciones anómalas de estructura	Observar si existen tornillos desanclados, partes metálicas dobladas o elementos deterioradas en la estructura	Trimestral	2 horas
Módulos fotovoltaicos	Comprobación visual del correcto funcionamiento del módulo	Observar si los módulos fotovoltaicos tienen elementos desgastados o si su superficie está sucia	Mensual	0,5 horas
Cableado CC	Comprobación visual del cableado	Observar si los cables de corriente continua tienen algún desperfecto en su cubierta o en los terminales	Trimestral	0,5 horas
Cableado CA	Comprobación visual del cableado	Observar si los cables de corriente continua tienen algún desperfecto en su cubierta o en los terminales	Trimestral	0,5 horas
Módulos fotovoltaicos	Comprobación del aislamiento eléctrico del generador	Verificar que la masa de los módulos fotovoltaicos está bien conectada a tierra y no existen derivaciones	Anual	2 horas
Módulos fotovoltaicos	Comprobación de la instalación eléctrica del generador	Verificar que las cajas de conexiones de los módulos fotovoltaicos no tienen ninguna anomalía	Anual	2 horas
Cableado CC	Comprobación de caída de tensión en los conductores	Medición de la caída de tensión de inicio a fin	Anual	1 hora

Cableado CA	Comprobación de caída de tensión en los conductores	Medición de la caída de tensión de inicio a fin	Anual	0,5 horas
Estructura	Comprobación de registros de toma a tierra	Verificar el estado de la toma de puesta a tierra	Mensual	0,2 horas
Inversor	Comprobación de funcionamiento del inversor	Verificar el correcto funcionamiento del inversor de las variables de tensión, intensidad, distorsión armónica, factor de potencia y temperatura.	Anual	2 horas
Canalización CC	Comprobación visual del estado	Observar la protección mecánica de la canalización CC	Anual	1 hora
Canalización CA	Comprobación visual del estado	Observar la protección mecánica de la canalización CA	Anual	0,5 horas