

# Meta Data API

## Instruction

|                 |                   |
|-----------------|-------------------|
| <b>Date</b>     | <b>2023/06/21</b> |
| <b>Author</b>   | <b>Immanuel</b>   |
| <b>Verified</b> | <b>Arun</b>       |
| <b>Revision</b> | <b>1</b>          |



## Table of Contents

|                                    |           |
|------------------------------------|-----------|
| <b>1. Meta Data API .....</b>      | <b>3</b>  |
| <b>2. Asset Management .....</b>   | <b>4</b>  |
| 2.1. Create [POST] .....           | 5         |
| 2.2. Read [GET].....               | 5         |
| 2.3. Update [PUT].....             | 6         |
| 2.4. Delete [DELETE] .....         | 6         |
| <b>3. Configuration .....</b>      | <b>7</b>  |
| 3.1. GET Bearing Info .....        | 7         |
| 3.2. GET Mount Info .....          | 7         |
| 3.3. GET Equipment Types .....     | 7         |
| 3.4. GET Component Types .....     | 7         |
| 3.5. Equipment Configuration ..... | 8         |
| 3.6. Component Configuration ..... | 12        |
| <b>4. Sensor Assignment .....</b>  | <b>24</b> |
| 4.1. Create.....                   | 24        |
| 4.2. Read.....                     | 24        |
| 4.3. Update .....                  | 24        |
| 4.4. Delete.....                   | 24        |
| <b>5. Metering.....</b>            | <b>25</b> |
| <b>6. Authentication .....</b>     | <b>25</b> |
| <b>7. OpenAPI yml file.....</b>    | <b>26</b> |



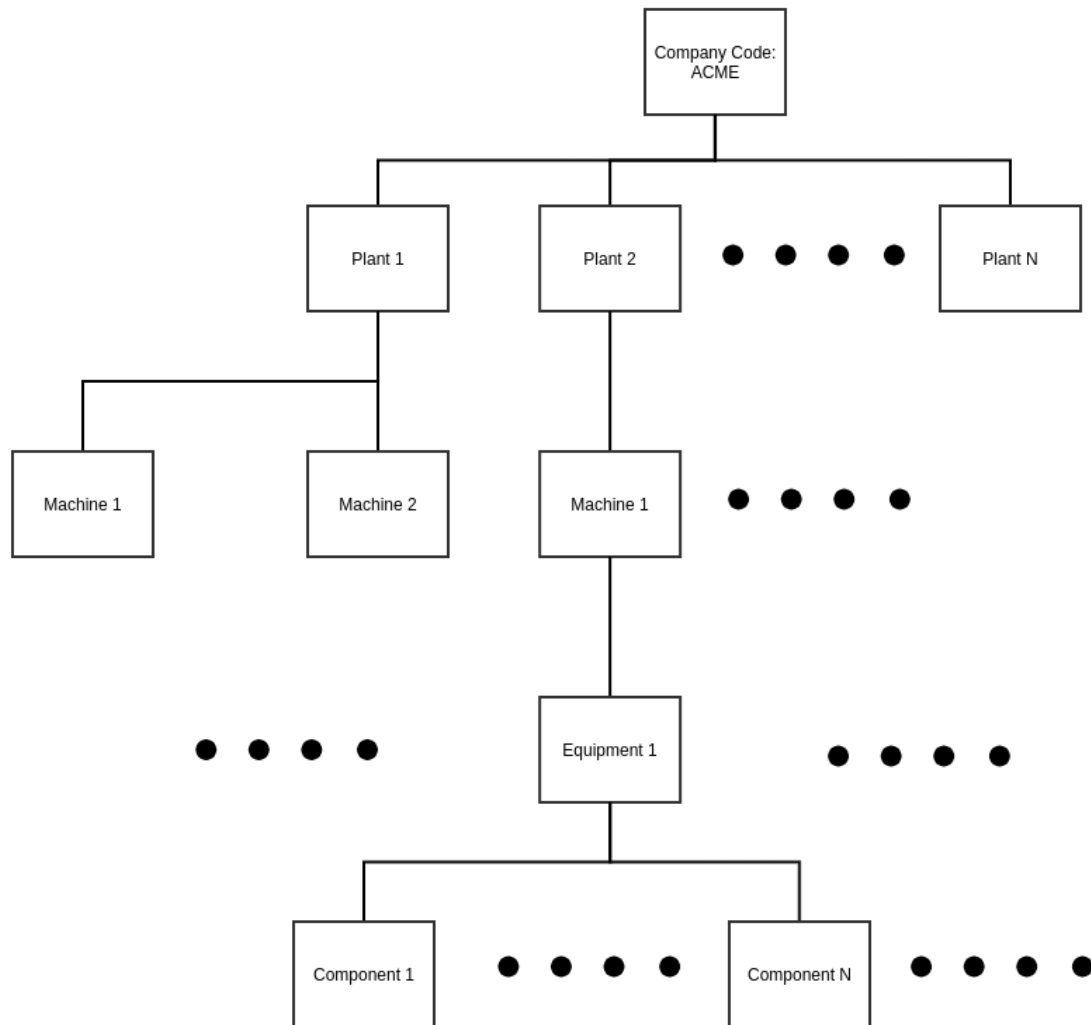
## 1. Meta Data API

- [Asset Management](#)
  - [Create \[POST\]](#)
  - [Read \[GET\]](#)
  - [Update \[PUT\]](#)
  - [Delete \[DELETE\]](#)
- [Configuration](#)
  - [GET Bearing Info](#)
  - [GET Mount Info](#)
  - [GET Equipment Types](#)
  - [GET Component Types](#)
  - [Equipment Configuration](#)
  - [Component Configuration](#)
- [Sensor Assignment](#)
  - [Create](#)
  - [Read](#)
  - [Update](#)
  - [Delete](#)
- [Metering](#)
- [Authentication](#)
- [OpenAPI Yml file](#)



## 2. Asset Management

There are 4 levels of assets creating a tree of the same heights. See the example below



The asset management focuses on maintaining the proper and correct structure of this tree based on the changing realities on the site using CRUD operations.



## 2.1. Create [POST]

```
/assetmanagement/plant
payload={
  "companyId": "DEMO",
  "customName": "Demo Plant",
  "externalId": "1ccc"
}
```

```
/assetmanagement/machine
payload={
  "customName": "AUTO-013",
  "plantId": 100000000001,
  "externalId": "121abc"
}
```

```
/assetmanagement/equipment
payload={
  "customName": "AUTO-013",
  "equipmentType": "motor",
  "machineId": 200000000001,
  "externalId": "121aaa"
}
```

```
/assetmanagement/component
payload={
  "componentType": "motor",
  "componentSubType": "ac",
  "customName": "Sensor #3",
  "equipmentId": 300000000001,
  "externalId": "121aaa"
}
```

## 2.2. Read [GET]

To read current asset information

```
/assetmanagement/plant/info/{plantId}
/assetmanagement/machine/info/{machineId}
/assetmanagement/equipment/info/{equipmentId}
/assetmanagement/component/info/{componentId}
/assetmanagement/tagId/info/{tagId}
```

To read the information about children of an asset

```
/assetmanagement/company/{id}/list
/assetmanagement/plant/{id}/list
/assetmanagement/machine/{id}/list
/assetmanagement/equipment/{id}/list
```



### 2.3. Update [PUT]

```
/assetmanagement/plant/{id}
payload={
  "customName": "Demo Plant",
  "externalId": "1ccc"
}
```

```
/assetmanagement/machine/{id}
payload={
  "customName": "AUTO-013",
  "externalId": "121abc"
}
```

```
/assetmanagement/equipment/{id}
payload={
  "customName": "AUTO-013",
  "externalId": "121aaa"
}
```

```
/assetmanagement/component/{id}
payload={
  "customName": "Sensor #3",
  "externalId": "121aaa"
}
```

### 2.4. Delete [DELETE]

```
/assetmanagement/plant/{id}
Delete the plant details from the DB
```

```
/assetmanagement/machine/{id}
Delete the machine details from the DB
```

```
/assetmanagement/equipment/{id}
Delete the equipment details from the DB
```

```
/assetmanagement/component/{id}
```



### 3. Configuration

Configuration is done on two levels, equipment and component.

#### 3.1. GET Bearing Info

In order to do the component configuration, a call can be made to this endpoint to get all the possible bearing numbers and make

```
/configmanagement/bearing/list [GET]
```

#### 3.2. GET Mount Info

A call to this endpoint will return the IDs for each mount type that can be used for sensor assignment

```
/configmanagement/mounttype/{id} [GET]  
/configmanagement/mounttype/list [GET]
```

#### 3.3. GET Equipment Types

```
/configmanagement/equipmentType/info [GET]
```

#### 3.4. GET Component Types

```
/configmanagement/componentType/info [GET]
```



### 3.5. Equipment Configuration

| Configuration - in equipment levelA1 |  |   |  |
|--------------------------------------|--|---|--|
| equipment type                       | RPM info   | response bases on RPM info  | component types to select for component config (linked to sheet 2) |
| Pump                                 | Is the equipment running at constant speed (rpm variation < 5%)?           | if yes, block the rest RPM info questions   | Pump   |
|                                      | Is any magnet installed on the shaft of this equipment to measure the RPM? | if no, rpm ratio config is not required   | Motor  |
|                                      |  | if yes, after the customer submitted config for each component of this equipment, send a message to remind the customer "if all components added, please configure rpm ratios" and provide a link | Turbine  |
|                                      | RPM ratio configuration  | select the master sensor (that measures the RPM) from the component list  | Gearbox  |
|                                      |  | RPM ratio of this sensor (component) to the master sensor   | Other  |
| Compressor                           | Is the equipment running at constant speed (rpm variation < 5%)?           | if yes, block the rest RPM info questions   | Compressor   |
|                                      | Is any magnet installed on the shaft of this equipment to measure the RPM? | if no, rpm ratio config is not required   | Motor  |
|                                      |  | if yes, after the customer submitted config for each component of this equipment, send a message to remind the customer "if all components added, please configure rpm ratios" and provide a link | Turbine  |
|                                      | RPM ratio configuration  | select the master sensor (that measures the RPM) from the component list  | Gearbox  |





|   |  |   |             |
|---|--|---|-------------|
|   |  | RPM ratio of this sensor (component) to the master sensor   | Other       |
| Fan   | Is the equipment running at constant speed (rpm variation < 5%)?           | if yes, block the rest RPM info questions   | Fan         |
|   | Is any magnet installed on the shaft of this equipment to measure the RPM? | if no, rpm ratio config is not required   | Motor       |
|   |  | if yes, after the customer submitted config for each component of this equipment, send a message to remind the customer "if all components added, please configure rpm ratios" and provide a link | Turbine     |
|   | RPM ratio configuration  | select the master sensor (that measures the RPM) from the component list  | Gearbox     |
| RPM ratio of this sensor (component) to the master sensor |  | Other   |             |
| Blower  | Is the equipment running at constant speed (rpm variation < 5%)?           | if yes, block the rest RPM info questions   | Blower      |
|   | Is any magnet installed on the shaft of this equipment to measure the RPM? | if no, rpm ratio config is not required   | Motor       |
|   |  | if yes, after the customer submitted config for each component of this equipment, send a message to remind the customer "if all components added, please configure rpm ratios" and provide a link | Turbine     |
|   | RPM ratio configuration  | select the master sensor (that measures the RPM) from the component list  | Gearbox     |
| RPM ratio of this sensor (component) to the master sensor |  | Other   |             |
| Transformer   | no need to ask RPM questions   | NA  | Transformer |



|       |  |   |  |
|-------|--|---|--|
| Other | Is this a rotating equipment   | if no, block the rest RPM info questions  | if not rotating equipment, only Other; otherwise, all the components bel |
|       | Is the equipment running at constant speed (rpm variation < 5%)?           | if yes, block the rest RPM info questions   | Motor  |
|       | Is any magnet installed on the shaft of this equipment to measure the RPM? | if no, rpm ratio config is not required   | Turbine  |
|       |  | if yes, after the customer submitted config for each component of this equipment, send a message to remind the customer "if all components added, please configure rpm ratios" and provide a link | Gearbox  |
|       | RPM ratio configuration (after component config)                           | select the master sensor (that measures the RPM) from the component list  | Pump   |
|       |  | RPM ratio of this sensor (component) to the master sensor   | Compressor   |
|       |  |   | Fan  |
|       |  |   | Blower   |
|       |  | Other   |  |

The table above is just to help the understanding of how the object below is formatted. It should be noted that only one key under `config` is allowed, this means that equipment can be configured for one type.



**Note:** If isConstantSpeed is True, We can't set isMagnetInstalled to True

/configmanagement/equipment [POST]

```
{
  "config": {
    "pump": {
      "isRotatingEquipment": true,
      "isConstantSpeed": false,
      "isMagnetInstalled": true
    },
    "compressor": {
      "isRotatingEquipment": true,
      "isConstantSpeed": false,
      "isMagnetInstalled": true
    },
    "fan": {
      "isRotatingEquipment": true,
      "isConstantSpeed": false,
      "isMagnetInstalled": true
    },
    "blower": {
      "isRotatingEquipment": true,
      "isConstantSpeed": false,
      "isMagnetInstalled": true
    },
    "transformer": {
      "isRotatingEquipment": true,
      "isConstantSpeed": false,
      "isMagnetInstalled": true
    },
    "other": {
      "isRotatingEquipment": true,
      "isConstantSpeed": false,
      "isMagnetInstalled": true
    }
  },
  "equipmentId": 9762,
  "companyId": "ACME",
  "description": "Test"
}
```



### 3.6. Component Configuration

| component type | component sub-type | info required for condifuration  | Fault mode configuration   |
|----------------|--------------------|--|--|
| Motor          | AC Motor           | constant speed (rpm variation < 5%) or not (take the answer from the equipment questionnaire if available) |  |
|                |                    | RPM (constant speed) or Min&Max RPM (variable speed)   | if RPM=0, don't configure any fault mode   |
|                |                    | Bearing type (journal bearing or anti-friction bearing)  | if it is journal bearing, configure journal bearing faults (find in sheet 3); otherwise configure unbalance, misalignment, l |
|                |                    | bearing number (bearing make and bearing number if it is anti-friction bearing)                            | if bearing number is given, configure bearing_faults   |
|                |                    | allowing the user to add more bearings (if anti-friction bearing)--multiple bearings to be enbaled         |  |
|                |                    | eletrical line frequency   | if both eletrical line frequency and number of rotor bars are given, configure induction_motor_stator_rotor                  |
|                |                    | number of rotor bars   |  |
|                | DC Motor           | constant speed (rpm variation < 5%) or not (take the answer from the equipment questionnaire if available) |  |
|                |                    | RPM (constant speed) or Min&Max RPM (variable speed)   | if RPM=0, don't configure any fault mode   |
|                |                    | Bearing type (journal bearing or anti-friction bearing)  | if it is journal bearing, configure journal bearing faults (find in sheet 3); otherwise configure unbalance, misalignment, l |
|                |                    | bearing number (bearing make and bearing number if it is anti-friction bearing)                            | if bearing number is given, configure bearing_faults   |
|                |                    | allowing the user to add more bearings (if anti-friction bearing)  |  |



|         |               |  |  |
|---------|---------------|--|--|
|         | other         | constant speed (rpm variation < 5%) or not (take the answer from the equipment questionnaire if available) |  |
|         |               | RPM (constant speed) or Min&Max RPM (variable speed)   | if RPM=0, don't configure any fault mode   |
|         |               | Bearing type (journal bearing or anti-friction bearing)  | if it is journal bearing, configure journal bearing faults; otherwise configure unbalance, misalignment, looseness           |
|         |               | bearing number (bearing make and bearing number if it is anti-friction bearing)                            | if bearing number is given, configure bearing_faults   |
|         |               | allowing the user to add more bearings (if anti-friction bearing)  |  |
| Turbine | Steam turbine | constant speed (rpm variation < 5%) or not (take the answer from the equipment questionnaire if available) |  |
|         |               | RPM (constant speed) or Min&Max RPM (variable speed)   | if RPM=0, don't configure any fault mode   |
|         |               | Bearing type (journal bearing or anti-friction bearing)  | if it is journal bearing, configure journal bearing faults (find in sheet 3); otherwise configure unbalance, misalignment, l |
|         |               | bearing number (bearing make and bearing number if it is anti-friction bearing)                            | if bearing number is given, configure bearing_faults   |
|         |               | allowing the user to add more bearings (if anti-friction bearing)  | allowing the user to add more bearings (if anti-friction bearing)  |
|         | Gas turbine   | constant speed (rpm variation < 5%) or not (take the answer from the equipment questionnaire if available) |  |
|         |               | RPM (constant speed) or Min&Max RPM (variable speed)   | if RPM=0, don't configure any fault mode   |



|   |              |  |   |   |
|---|--------------|--|---|---|
|   |              | <i>Bearing type (journal bearing or anti-friction bearing)</i>   | <i>if it is journal bearing, configure journal bearing faults (find in sheet 3); otherwise configure unbalance, misalignment, l</i> |   |
|   |              | <i>bearing number (bearing make and bearing number if it is anti-friction bearing)</i>                               | <i>if bearing number is given, configure bearing_faults</i>   |   |
|   |              | <i>allowing the user to add more bearings (if anti-friction bearing)</i>   | <i>allowing the user to add more bearings (if anti-friction bearing)</i>  |   |
|   | <i>other</i> | <i>constant speed (rpm variation &lt; 5%) or not (take the answer from the equipment questionnaire if available)</i> |   |   |
|   |              | <i>RPM (constant speed) or Min&amp;Max RPM (variable speed)</i>  | <i>if RPM=0, don't configure any fault mode</i>   |   |
|   |              | <i>Bearing type (journal bearing or anti-friction bearing)</i>   | <i>if it is journal bearing, configure journal bearing faults (find in sheet 3); otherwise configure unbalance, misalignment, l</i> |   |
|   |              | <i>bearing number (bearing make and bearing number if it is anti-friction bearing)</i>                               | <i>if bearing number is given, configure bearing_faults</i>   |   |
|   |              | <i>allowing the user to add more bearings (if anti-friction bearing)</i>   | <i>allowing the user to add more bearings (if anti-friction bearing)</i>  |   |
|   | Gearbox      | Fixed-axis gearbox   | <i>constant speed (rpm variation &lt; 5%) or not (take the answer from the equipment questionnaire if available)</i>                |   |
|   |              |  | <i>RPM (constant speed) or Min&amp;Max RPM (variable speed)</i>   | <i>if RPM is provided, configure unbalance, misalignment, looseness</i> |
| <i>each shaft: RPM_in, number of teeth T1, T2, RPM_out(automatically calculated based on RPM_in, T1,T2)</i> |              |  | <i>configure gear_fault</i>   |   |
| <i>each shaft: bearing number (bearing make and bearing number)</i>   |              |  | <i>if bearing number is given, configure bearing_faults</i>   |   |



|      |                              |  |  |
|------|------------------------------|--|--|
|      |                              | allowing the user to add more shafts and configure accordingly - multiple GMFs to be enabled               |  |
| Pump | Centrifugal Pump             | constant speed (rpm variation < 5%) or not (take the answer from the equipment questionnaire if available) |  |
|      |                              | RPM (constant speed) or Min&Max RPM (variable speed)   | if RPM=0, don't configure any fault mode   |
|      |                              | Bearing type (journal bearing or anti-friction bearing)  | if it is journal bearing, configure journal bearing faults (find in sheet 3); otherwise configure unbalance, misalignment, l |
|      |                              | bearing number (bearing make and bearing number if it is anti-friction bearing)                            | if bearing number is given, configure bearing_faults   |
|      |                              | allowing the user to add more bearings (if anti-friction bearing)  |  |
|      |                              | number of vanes  | configure pump_vane_fault  |
|      | Sucker Rod Pump (stuffing bo | no need  | configure polish_rod_misalignment_ae under aeFaultDetection  |
|      | other                        | constant speed (rpm variation < 5%) or not (take the answer from the equipment questionnaire if available) |  |
|      |                              | RPM (constant speed) or Min&Max RPM (variable speed)   | if RPM=0, don't configure any fault mode   |
|      |                              | Bearing type (journal bearing or anti-friction bearing)  | if it is journal bearing, configure journal bearing faults (find in sheet 3); otherwise configure unbalance, misalignment, l |
|      |                              | bearing number (bearing make and bearing number if it is anti-friction bearing)                            | if bearing number is given, configure bearing_faults   |
|      |                              | allowing the user to add more bearings (if anti-friction bearing)  | allowing the user to add more bearings (if anti-friction bearing)  |



|     |                 |  |  |
|-----|-----------------|--|--|
|     |                 | number of vanes (if applicable)  | configure pump_vane_fault  |
| Fan | Centrifugal Fan | constant speed (rpm variation < 5%) or not (take the answer from the equipment questionnaire if available) |  |
|     |                 | RPM (constant speed) or Min&Max RPM (variable speed)   | if RPM=0, don't configure any fault mode   |
|     |                 | Bearing type (journal bearing or anti-friction bearing)  | if it is journal bearing, configure journal bearing faults; otherwise configure unbalance, misalignment, looseness           |
|     |                 | bearing number (bearing make and bearing number if it is anti-friction bearing)                            | if bearing number is given, configure bearing_faults   |
|     |                 | allowing the user to add more bearings (if anti-friction bearing)  |  |
|     |                 | number of blades   | configure pump_vane_fault  |
|     | other           | constant speed (rpm variation < 5%) or not (take the answer from the equipment questionnaire if available) |  |
|     |                 | RPM (constant speed) or Min&Max RPM (variable speed)   | if RPM=0, don't configure any fault mode   |
|     |                 | Bearing type (journal bearing or anti-friction bearing)  | if it is journal bearing, configure journal bearing faults (find in sheet 3); otherwise configure unbalance, misalignment, l |
|     |                 | bearing number (bearing make and bearing number if it is anti-friction bearing)                            | if bearing number is given, configure bearing_faults   |
|     |                 | allowing the user to add more bearings (if anti-friction bearing)  | allowing the user to add more bearings (if anti-friction bearing)  |
|     |                 | number of blades (if applicable)   | configure pump_vane_fault  |
|     | Blower          | Centrifugal Blower   | constant speed (rpm variation < 5%) or not (take the answer from the equipment questionnaire if available)                   |





|            |                              |  |  |
|------------|------------------------------|--|--|
|            |                              | RPM (constant speed) or Min&Max RPM (variable speed)   | if RPM=0, don't configure any fault mode   |
|            |                              | Bearing type (journal bearing or anti-friction bearing)  | if it is journal bearing, configure journal bearing faults (find in sheet 3); otherwise configure unbalance, misalignment, l |
|            |                              | bearing number (bearing make and bearing number if it is anti-friction bearing)                            | if bearing number is given, configure bearing_faults   |
|            |                              | allowing the user to add more bearings (if anti-friction bearing)  |  |
|            |                              | number of blades   | configure pump_vane_fault  |
|            | other                        | constant speed (rpm variation < 5%) or not (take the answer from the equipment questionnaire if available) |  |
|            |                              | RPM (constant speed) or Min&Max RPM (variable speed)   | if RPM=0, don't configure any fault mode   |
|            |                              | Bearing type (journal bearing or anti-friction bearing)  | if it is journal bearing, configure journal bearing faults (find in sheet 3); otherwise configure unbalance, misalignment, l |
|            |                              | bearing number (bearing make and bearing number if it is anti-friction bearing)                            | if bearing number is given, configure bearing_faults   |
|            |                              | allowing the user to add more bearings (if anti-friction bearing)  | allowing the user to add more bearings (if anti-friction bearing)  |
|            |                              | number of blades (if applicable)   | configure pump_vane_fault  |
| Compressor | Reciprocating air compressor | constant speed (rpm variation < 5%) or not (take the answer from the equipment questionnaire if available) |  |
|            |                              | RPM (constant speed) or Min&Max RPM (variable speed)   | if RPM=0, don't configure any fault mode   |
|            |                              | sensor installed on cranke case or cylider   | configure fault modes of cranke case or cylinder (find in sheet 3)   |



|             |                   |   |  |
|-------------|-------------------|---|--|
|             |                   |   |  |
|             | other             | constant speed (rpm variation < 5%) or not (take the answer from the equipment questionnaire if available)                        |  |
|             |                   | RPM (constant speed) or Min&Max RPM (variable speed)  | if RPM=0, don't configure any fault mode   |
|             |                   | Bearing type (journal bearing or anti-friction bearing)   | if it is journal bearing, configure journal bearing faults (find in sheet 3); otherwise configure unbalance, misalignment, l |
|             |                   | bearing number (bearing make and bearing number if it is anti-friction bearing)   | if bearing number is given, configure bearing_faults   |
|             |                   | allowing the user to add more bearings (if anti-friction bearing)   | allowing the user to add more bearings (if anti-friction bearing)  |
| Transformer | power transformer | electrical line frequency   | configure partial_discharge under aeFaultDetection   |
| Other       | other             | rotating component or not (take the answer from the equipment questionnaire if available)   | if not, configure rpm = 0, no fault mode to configure  |
|             |                   | if rotation component, constant speed (rpm variation < 5%) or not (take the answer from the equipment questionnaire if available) |  |
|             |                   | RPM (constant speed) or Min&Max RPM (variable speed)  | if RPM=0, don't configure any fault mode   |
|             |                   | Bearing type (journal bearing or anti-friction bearing)   | if it is journal bearing, configure journal bearing faults (find in sheet 3); otherwise configure unbalance, misalignment, l |
|             |                   | bearing number (bearing make and bearing number if it is anti-friction bearing)   | if bearing number is given, configure bearing_faultsD92  |
|             |                   | allowing the user to add more bearings (if anti-friction bearing)   | allowing the user to add more bearings (if anti-friction bearing)  |



The table above is just to help the understanding of how the object below is formatted. It should be noted that only one key under `config` is allowed, this means that components can be configured for one type.

`/configmanagement/component` [POST]

```
{
  "config": {
    "motor": {
      "ac": {
        "speed": {
          "minRPM": 200,
          "maxRPM": 400
        },
        "bearing": {
          "bearingType": 0,
          "antiFriction": [
            {
              "bearingNumber": "1000",
              "bearingMake": "ISOS"
            }
          ]
        },
        "stator": {
          "electricalLineFreq": 2.0,
          "numberOfBars": 10
        }
      },
      "dc": {
        "speed": {
          "minRPM": 300,
          "maxRPM": null
        },
        "bearing": {
          "bearingType": 1,
          "antiFriction": [
            {
              "bearingNumber": "2000",
              "bearingMake": "IOSS"
            },
            {
              "bearingNumber": "2001",
              "bearingMake": "SISS"
            }
          ]
        }
      }
    },
    "other": {
      "speed": {
        "minRPM": 200,
        "maxRPM": 400
      },
      "bearing": {
        "bearingType": 0,
        "antiFriction": [
```



```
        {
          "bearingNumber": "1000",
          "bearingMake": "ISOS"
        }
      ]
    }
  },
  "turbine": {
    "steam": {
      "speed": {
        "minRPM": 200,
        "maxRPM": 400
      },
      "bearing": {
        "bearingType": 0,
        "antiFriction": [
          {
            "bearingNumber": "1000",
            "bearingMake": "ISOS"
          }
        ]
      }
    },
    "gas": {
      "speed": {
        "minRPM": 300,
        "maxRPM": null
      },
      "bearing": {
        "bearingType": 1,
        "antiFriction": [
          {
            "bearingNumber": "2000",
            "bearingMake": "IOSS"
          },
          {
            "bearingNumber": "2001",
            "bearingMake": "SISS"
          }
        ]
      }
    },
    "other": {
      "speed": {
        "minRPM": 200,
        "maxRPM": 400
      },
      "bearing": {
        "bearingType": 0,
        "antiFriction": [
          {
            "bearingNumber": "1000",
            "bearingMake": "ISOS"
          }
        ]
      }
    }
  ]
}
```



```
    }
  },
  "gearbox": {
    "fixedAxis": [
      {
        "rpmIn": 500,
        "noOfTeeth1": 24,
        "noOfTeeth2": 42,
        "shaftBearingNumber": "1200",
        "shaftBearingMake": "SSIO"
      },
      {
        "rpmIn": 600,
        "noOfTeeth1": 14,
        "noOfTeeth2": 32,
        "shaftBearingNumber": "1201",
        "shaftBearingMake": "SSIS"
      }
    ]
  },
  "pump": {
    "centrifugal": {
      "speed": {
        "minRPM": 200,
        "maxRPM": 400
      },
      "bearing": {
        "bearingType": 0,
        "antiFriction": [
          {
            "bearingNumber": "1000",
            "bearingMake": "ISOS"
          }
        ]
      }
    },
    "noVanes": "interger or null"
  },
  "suckerRod": {
    "active": 1
  },
  "other": {
    "speed": {
      "minRPM": 200,
      "maxRPM": 400
    },
    "bearing": {
      "bearingType": 0,
      "antiFriction": [
        {
          "bearingNumber": "1000",
          "bearingMake": "ISOS"
        }
      ]
    }
  },
  "noVanes": 3
}
```



```
    },
    "fan": {
      "centrifugal": {
        "speed": {
          "minRPM": 200,
          "maxRPM": 400
        },
        "bearing": {
          "bearingType": 0,
          "antiFriction": [
            {
              "bearingNumber": "1000",
              "bearingMake": "ISOS"
            }
          ]
        },
        "noBlades": null
      },
      "other": {
        "speed": {
          "minRPM": 300,
          "maxRPM": null
        },
        "bearing": {
          "bearingType": 1,
          "antiFriction": [
            {
              "bearingNumber": "2000",
              "bearingMake": "IOSS"
            },
            {
              "bearingNumber": "2001",
              "bearingMake": "SISS"
            }
          ]
        },
        "noBlades": 4
      }
    },
    "blower": {
      "centrifugal": {
        "speed": {
          "minRPM": 200,
          "maxRPM": 400
        },
        "bearing": {
          "bearingType": 0,
          "antiFriction": [
            {
              "bearingNumber": "1000",
              "bearingMake": "ISOS"
            }
          ]
        },
        "noBlades": null
      }
    }
  }
}
```



```
},
"other": {
  "speed": {
    "minRPM": 300,
    "maxRPM": null
  },
  "bearing": {
    "bearingType": 1,
    "antiFriction": [
      {
        "bearingNumber": "2000",
        "bearingMake": "IOSS"
      },
      {
        "bearingNumber": "2001",
        "bearingMake": "SISS"
      }
    ]
  },
  "noBlades": 3
},
"transformer": {
  "power": {
    "electricalLineFreq": 4.5
  }
},
"other": {
  "speed": {
    "minRPM": 200,
    "maxRPM": 400
  },
  "bearing": {
    "bearingType": 0,
    "antiFriction": [
      {
        "bearingNumber": "1000",
        "bearingMake": "ISOS"
      }
    ]
  }
},
"tagId": "LLLLLZQH3R9287MRMDE83383VR2F",
}
```



## 4. Sensor Assignment

### 4.1. Create

```
/sensorassignment [POST]

{
  "sensorId": "30000c2a691f4072",
  "tagId": "ACCLMR100893910GBI82105S9RA",
  "companyId": "ACCL",
  "mountTypeId": "5e42a0ea6a4b956e5dda7ed5"
}
```

### 4.2. Read

```
/sensorassignment/{sensorId} [GET]
/sensorassignment/list/{companyId} [GET]
```

### 4.3. Update

```
/sensorassignment/{sensorId} [PUT]

{
  "mountTypeId": "61f2f4c882e19c6a4987d69d",
}
```

### 4.4. Delete

```
/sensorassignment/{sensorId} [DELETE]
```





## 5. Metering

API will be restricted to 1000 calls/day for each account

## 6. Authentication

Token Generating URL:

```
curl --location
'https://keycloak.nanoprecisedataservices.com/realms/master/protocol/openid-
connect/token' \
--header 'Content-Type: application/x-www-form-urlencoded' \
--data-urlencode 'username=*****' \
--data-urlencode 'password=*****' \
--data-urlencode 'grant_type=*****' \
--data-urlencode 'client_id=*****' \
--data-urlencode 'client_secret=*****'
```

Users need to sign in every 24 hours to get a new token that is valid for the same period.



## 7. OpenAPI yml file

Available under following [link](#)