

# Short term training program for student of BU-UIT Bhopal

NITTTR Bhopal

## Project 01- PUMP

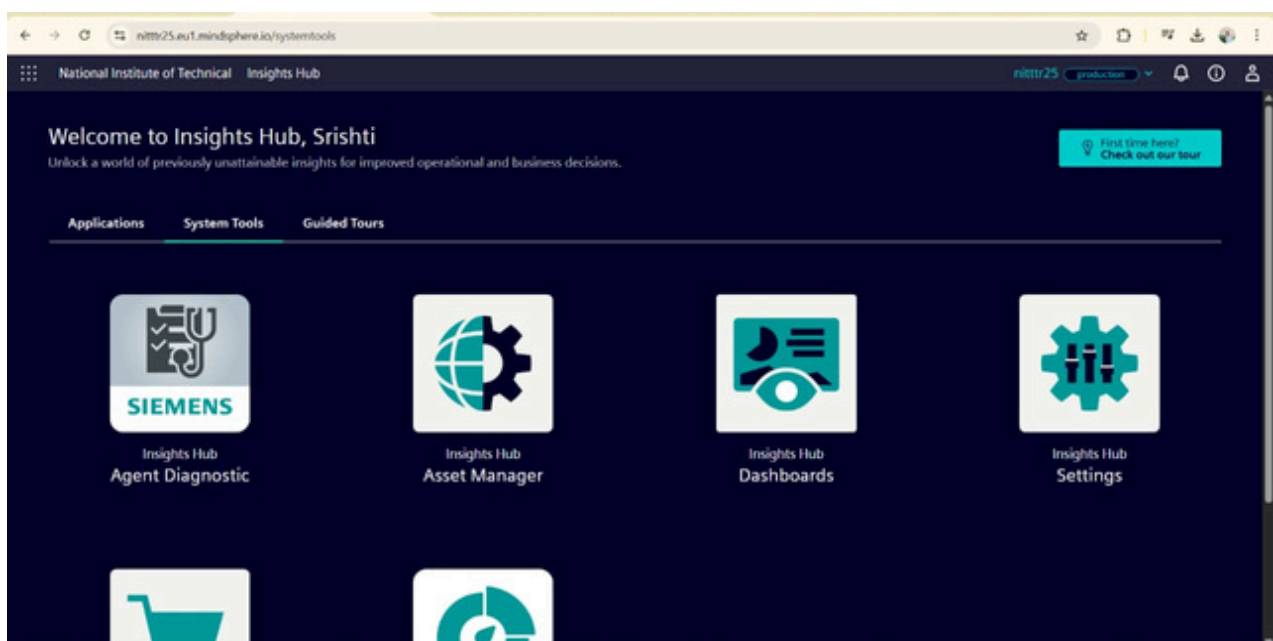
Project title : PUMP

By : SHUBHI ARJARIYA

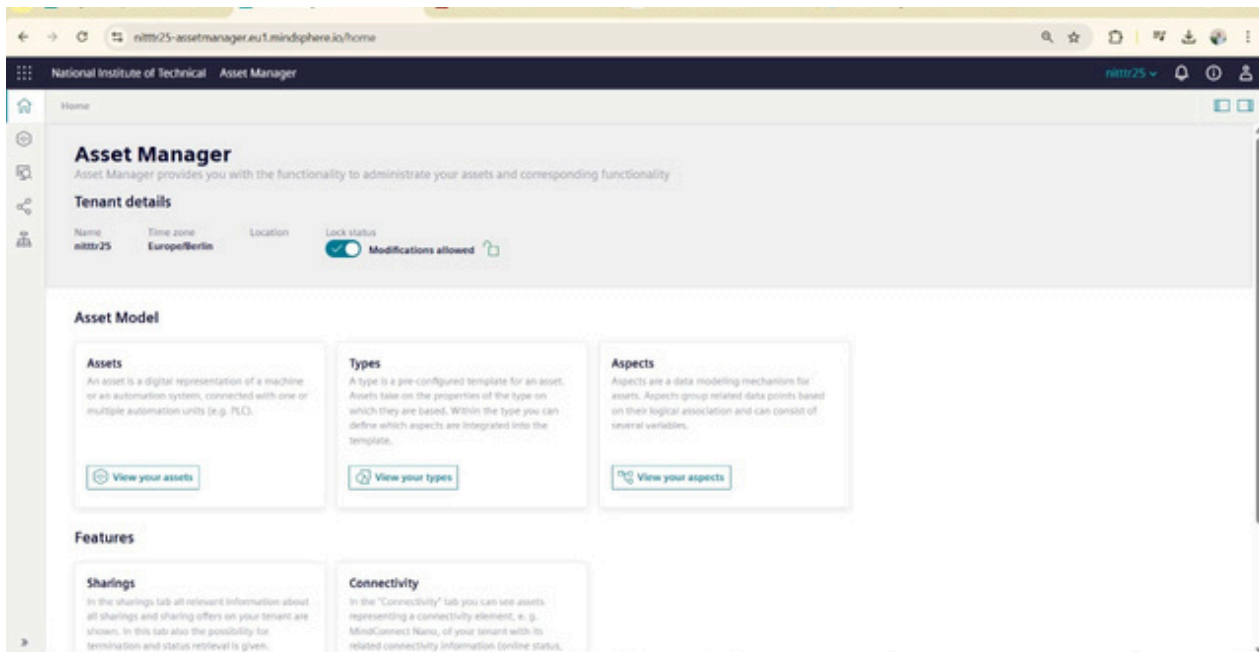
Mentored by : TOSHIT PATHAK SIR

### #1 VIRTUAL ASSET

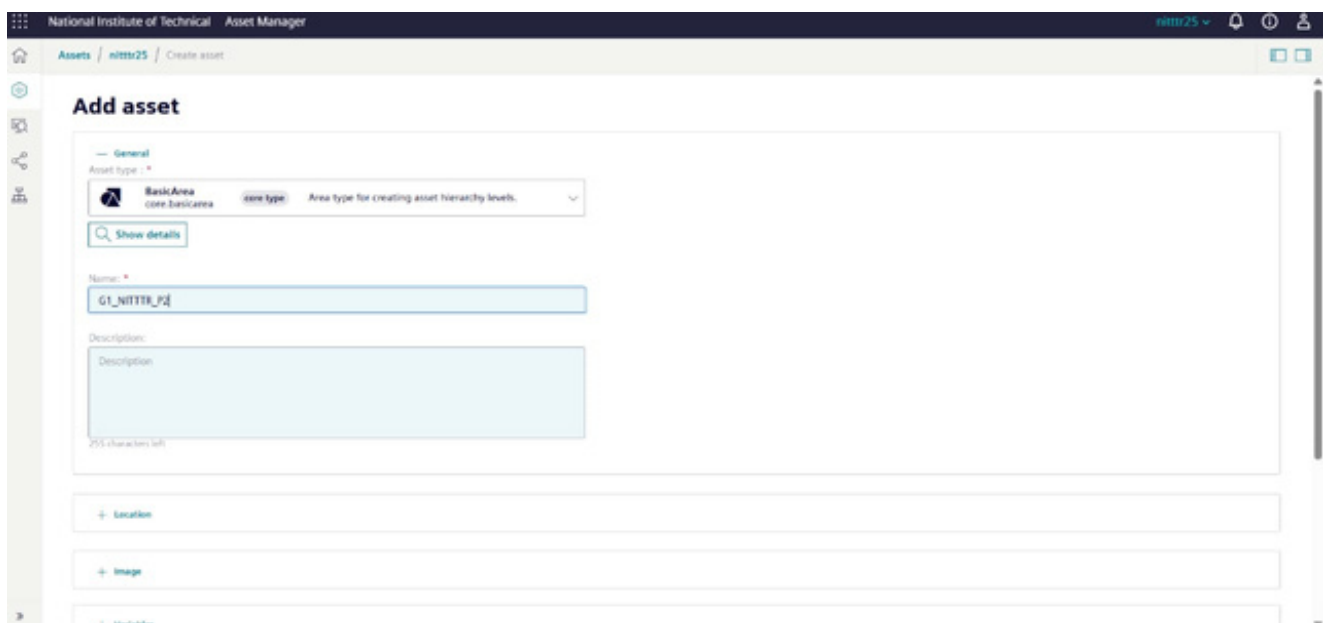
**Step 01:** Click on asset manager



## Step 02: Click on View your Aspects



## Step 03: Click on create asset and select basic area type .



**Step 04** : name it “ G1\_NITTTR\_P2”

National Institute of Technical Asset Manager

Assets / nitttr25 / Create asset

### Add asset

— General

Asset type \*

BasicArea core:BasicArea core type Area type for creating asset hierarchy levels. ▾

Show details

Name: \*

G1\_NITTTR\_P2

Description:

Description

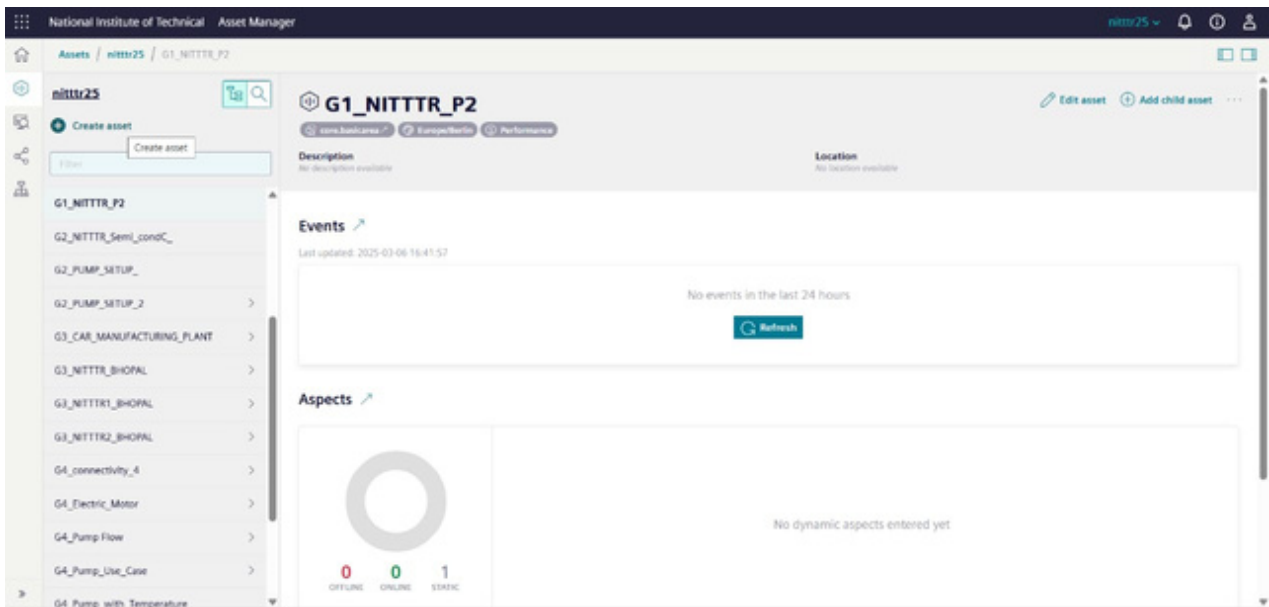
255 characters left

+ Location

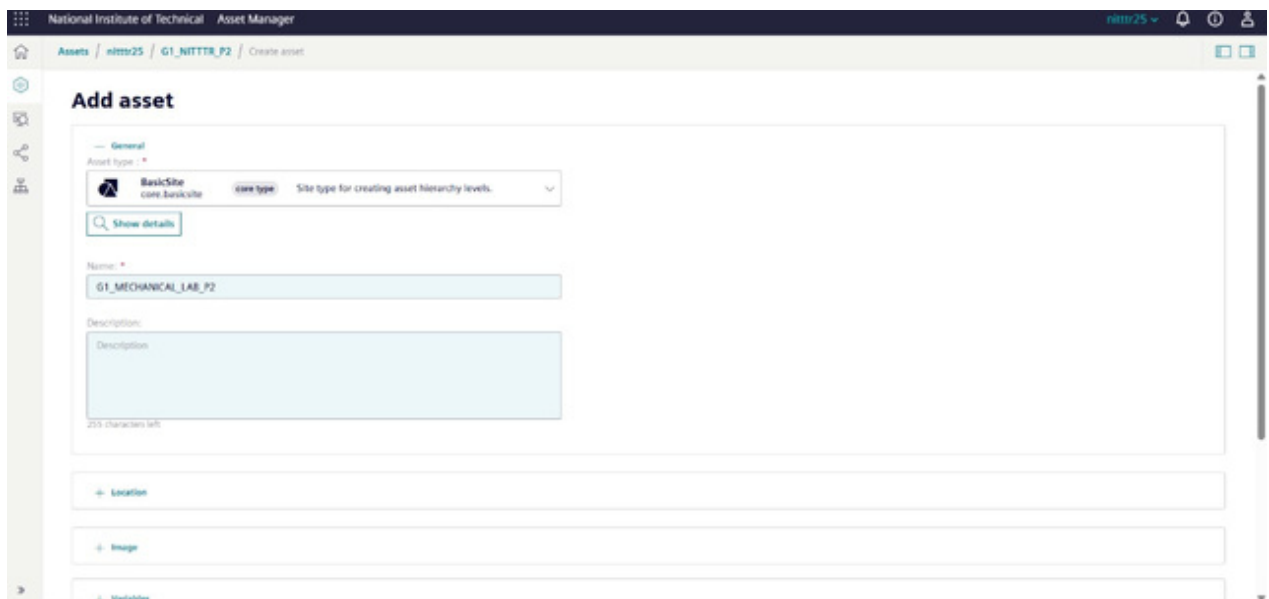
+ Image

+ Variables

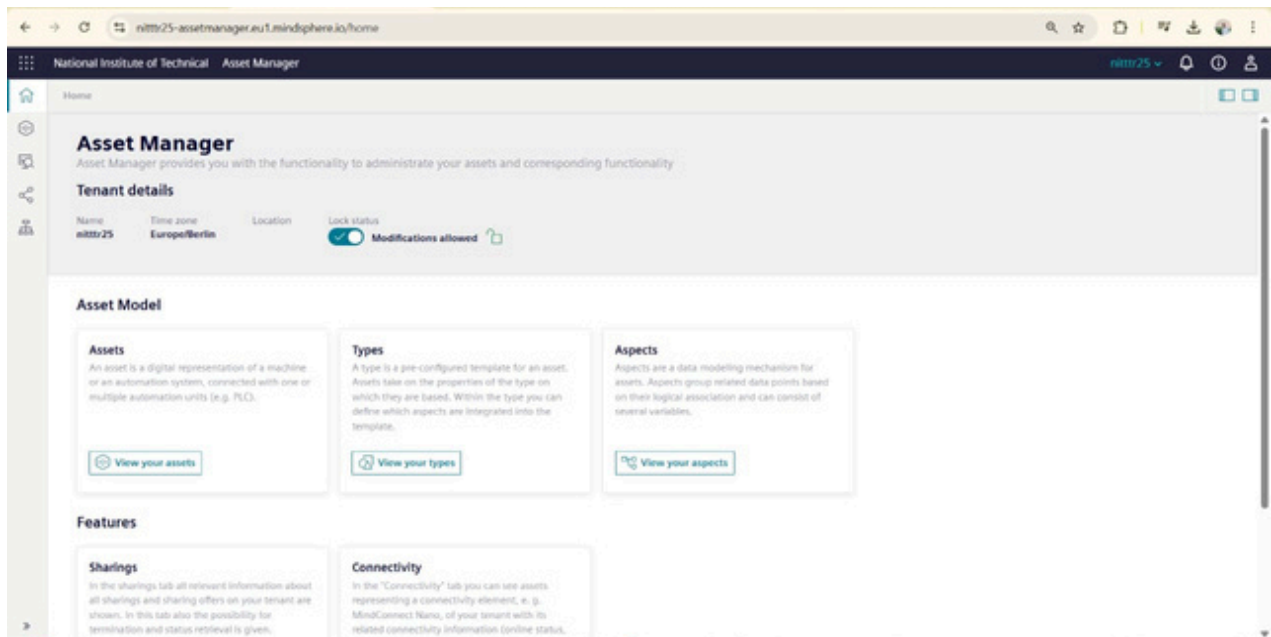
**STEP 05:** Click on add child asset



**Step 06:** Create basic sitetype Asset and name it “G1\_MECHANICAL\_LAB\_P2”



**Step 07:** Go to home and click on view your Aspects



**Step 08:** Click on create Aspect and it will show this.

National Institute of Technical Asset Manager nitr25

Library / Aspect Types / Create aspect

### Create aspect

— Aspect Information

Aspect ID: nitr25.G1\_PUMP\_P2  
Aspect ID cannot be changed after creation

Name: G1\_PUMP\_P2

Description:  
Description  
255 characters left

Choose category:  
The category of an aspect cannot be changed afterwards.

☒ Dynamic  
The aspect is used for time series data

☐ Static  
The aspect is used for static data

— Variables

**STEP 09:** Create aspect and name it ” G1\_PUMP\_P2”

National Institute of Technical Asset Manager nitr25

Library / Aspect Types / Create aspect

### Create aspect

— Aspect Information

Aspect ID: nitr25.G1\_PUMP\_P2  
Aspect ID cannot be changed after creation

Name: G1\_PUMP\_P2

Description:  
Description  
255 characters left

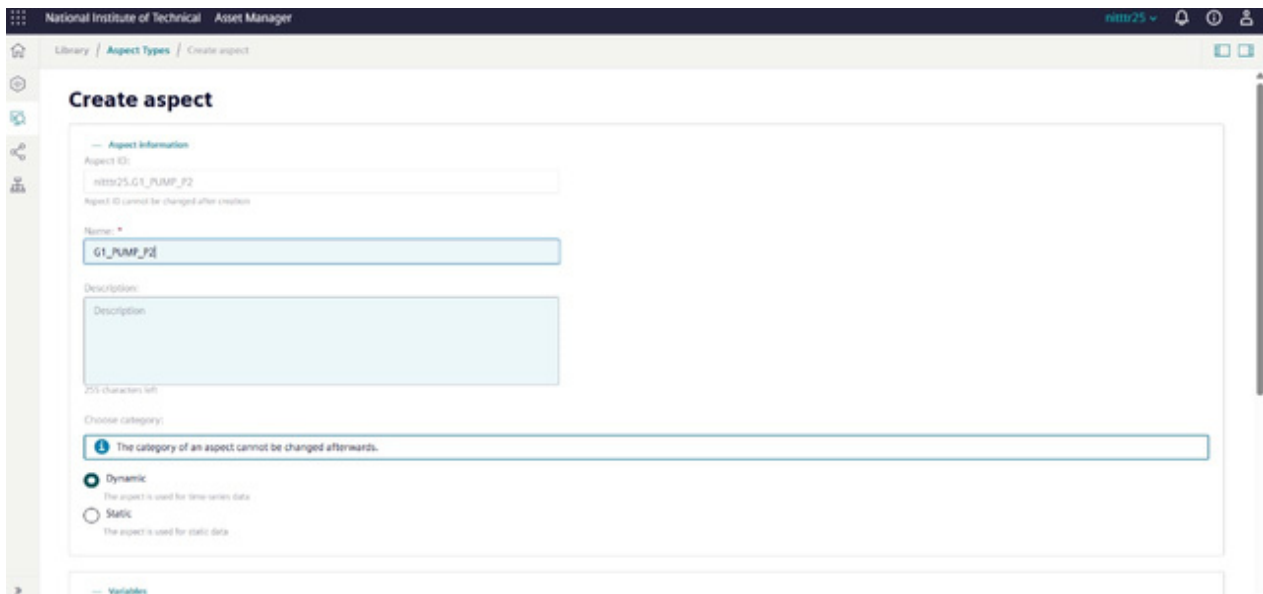
Choose category:  
The category of an aspect cannot be changed afterwards.

☒ Dynamic  
The aspect is used for time series data

☐ Static  
The aspect is used for static data

— Variables

**STEP 10:** Scroll down and click on add variables



The screenshot shows the 'Create aspect' interface in the National Institute of Technical Asset Manager. The page has a dark header with the logo and 'Asset Manager' text. Below the header, there's a breadcrumb trail: 'Library / Aspect Types / Create aspect'. The main content area is titled 'Create aspect' and contains the following fields:

- Aspect ID:** A text input field containing 'nittr25.G1\_PUMP\_P2'. Below it, a small note says 'Aspect ID cannot be changed after creation'.
- Name:** A text input field containing 'G1\_PUMP\_P2'.
- Description:** A large text area with a light blue background. Below it, a note says '255 characters left'.
- Choose category:** A section with two radio buttons:
  - Dynamic:** Selected by default. Below it, a note says 'The aspect is used for time series data'.
  - Static:** Unselected. Below it, a note says 'The aspect is used for static data'.

At the bottom of the form, there is a section titled 'Variables' which is currently empty.

**STEP 11:** Add variables and name them accordingly as shown below.

National Institute of Technical Asset Manager nitr25

Library / Aspect Types / Create aspect

255 characters left

Choose category:

☒ **Dynamic**  
The aspect is used for time-varying data.

☐ **Static**  
The aspect is used for static data.

**Variables**

Variable names must be unique inside an aspect.  
The data type BIG\_STRING is only available for a dynamic aspect.

[Add variable](#)
[Import variables](#)
[Download template](#)
[Export variables](#)
[Delete all new](#)

Name	Unit	Data type	Max. length	
<input type="text" value="pump_speed"/>	<input type="text" value="rpm"/>	<input type="text" value="INT"/>	<input type="text" value="Max. length"/>	Defined <input type="button" value="X"/>
<input type="text" value="pump_pressure"/>	<input type="text" value="bar"/>	<input type="text" value="INT"/>	<input type="text" value="Max. length"/>	Defined <input type="button" value="X"/>
<input type="text" value="pump_flow_rate"/>	<input type="text" value="L/h"/>	<input type="text" value="INT"/>	<input type="text" value="Max. length"/>	Defined <input type="button" value="X"/>

[Save](#) [Cancel](#)

**STEP 12:** GO to home and click on View your types

Insights Hub | Siemens Software | Asset Manager | Node-RED: Flow 1 | Node-RED Dashboard | Video - Google Drive

nitr25-assetmanager.eu | nitr25

National Institute of Technical Asset Manager

Home

## Asset Manager

Asset Manager provides you with the functionality to administrate your assets and corresponding functionality

### Tenant details

Name: nitr25 | Time zone: Europe/Berlin | Location: | Lock status: ☒ Modifications allowed

### Asset Model

#### Assets

An asset is a digital representation of a machine or an automation system, connected with one or multiple automation units (e.g. PLC).

[View your assets](#)

#### Types

A type is a pre-configured template for an asset. Assets take on the properties of the type on which they are based. Within the type you can define which aspects are integrated into the template.

[View your types](#)

#### Aspects

Aspects are a data modeling mechanism for assets. Aspects group related data points based on their logical association and can consist of several variables.

[View your aspects](#)

### Features

#### Sharings

In the sharings tab all relevant information about all sharings and sharing offers on your tenant are shown. In this tab also the possibility for termination and status retrieval is given.

#### Connectivity

In the "Connectivity" tab you can see assets representing a connectivity element, e.g. MindConnect Nano, of your tenant with its related connectivity information (online status).

84°F Sunny | Search | 15:35 06-03-2023



**STEP 13:** Click on create a type.

The screenshot shows the 'Create type' interface in the National Institute of Technical Asset Manager. The breadcrumb trail is 'Library / Asset Types / core.basisset / Create type'. The form is titled 'Create type' and contains the following fields:

- Parent type:** A dropdown menu with 'core.basisset' selected. Below it, a note states 'Parent type due to hierarchical order'.
- Name:** A text input field containing 'G1\_PUMP\_TYPE\_P2'.
- Type ID:** A text input field containing 'G1\_PUMP\_TYPE\_P2'. A red asterisk is next to the label. Below the field, a note states 'Type ID cannot be changed after creation'.
- Description:** A large text area with the placeholder text 'Description'. A note at the bottom left of the area states '255 characters left'.

At the bottom of the form, there are two buttons: '+ Image' and '+ Variables'.

**STEP 14:** Create a type and name it “G1\_PUMP\_TYPE\_P2”

National Institute of Technical Asset Manager nitir25

Library / Asset Types / core.basisset / Create type

## Create type

**Type information**

Parent type:

Parent type due to hierarchical order

Name:

Type ID:

Type ID cannot be changed after creation

Description:

255 characters left

[+ Image](#)

[+ Variables](#)

**STEP 15:** Scroll down and click on “+Aspects” and select “G1\_PUMP\_P2”.

National Institute of Technical Asset Manager nitir25

Library / Asset Types / core.basisset / Create type

## Add aspects to your type

☒ All
 ☐ Static
 ☐ Dyna...

☐ Only checked

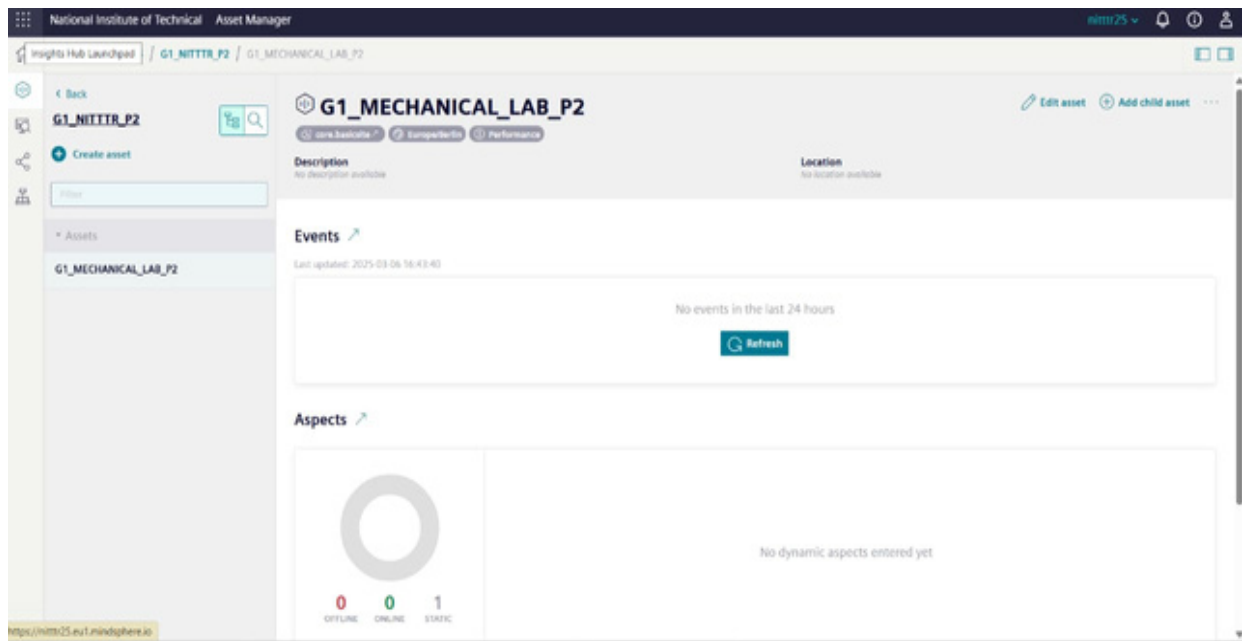
- ☐ G1\_newAspect  
nitir25.G1\_newAspect
- ☐ G1\_PUMP\_A4  
nitir25.G1\_PUMP\_A4
- ☐ G1\_PUMP\_Current  
nitir25.G1\_PUMP\_Current
- ☐ G1\_PUMP\_FLUID  
nitir25.G1\_PUMP\_FLUID
- ☒ G1\_PUMP\_P2  
nitir25.G1\_PUMP\_P2 1
- ☐ G1\_PUMP\_PRESSURE  
nitir25.G1\_PUMP\_PRESSURE
- ☐ G1\_SAFETY\_CONTROL\_SYSTEM  
nitir25.G1\_SAFETY\_CONTROL\_SYSTEM
- ☐ G1\_TOOLING\_PARAMETERS  
nitir25.G1\_TOOLING\_PARAMETERS
- ☐ G1\_WATER\_QUALITY\_TREATMENT  
nitir25.G1\_WATER\_QUALITY\_TREATMENT

**Nothing selected**

Please select something in the list or reset your filter.

[Cancel](#) [Add \(1\)](#)

**STEP 16:** Go to assets and go to “G1\_MECHANICAL\_LAB\_P2” And click on Add Child Asset



**STEP 17:** Create child asset of type ”G1\_PUMP\_TYPE\_P2” And name it “G1\_PUMP\_VIRTUAL\_P2”

**Add asset**

General

Asset type: G1\_PUMP\_TYPE...  
nitr25.G1\_PUM...

Show details

Name: G1\_PUMP\_VIRTUAL\_P2

Description: Description

255 characters left

+ Location

+ Image

+ Variables

**STEP 18:** “G1\_PUMP\_VIRTUAL\_P2” is created successfully.

**Aspects**

Dynamic Static

Aggregated Time Series Data  
The following table shows the most recent values of aggregated time series data within the last 12 hours. Therefore, the values may differ from the previous view.  
For technical details, please refer to <https://developer.mindaphere.io/concepts/concept-lab.html>.

Refresh

Name	Status	Unit
G1_PUMP_P2	No data available 2025-03-08 14:55:00	L/min
pump_flow_rate	-	L/min
pump_pressure	-	bar
pump_speed	-	rpm

## #2 CREATING AGENT ASSET

**STEP 19:** Create another child asset of “ G1\_MECHANICAL\_LAB\_P2” and name it ”G1\_PUMP\_AGENT\_P2 ” of type “mindconnectlib”

National Institute of Technical Asset Manager

Assets / nitr25 / G1\_NITTR\_P2 / G1\_MECHANICAL\_LAB\_P2 / Create asset

### Add asset

— General

Asset type: MindConnectLib core: mindlib core type: MindConnect Lib Agent asset type

Show details

Name: G1\_PUMP\_AGENT\_P2

Description: Description

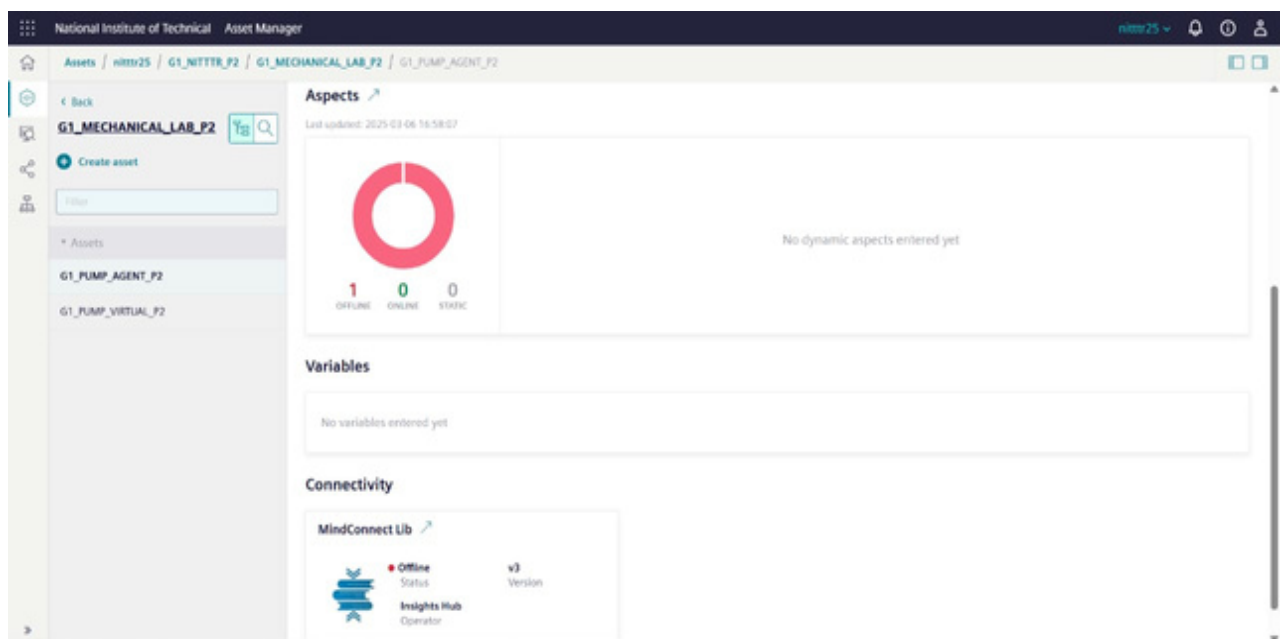
135 characters left

+ Location

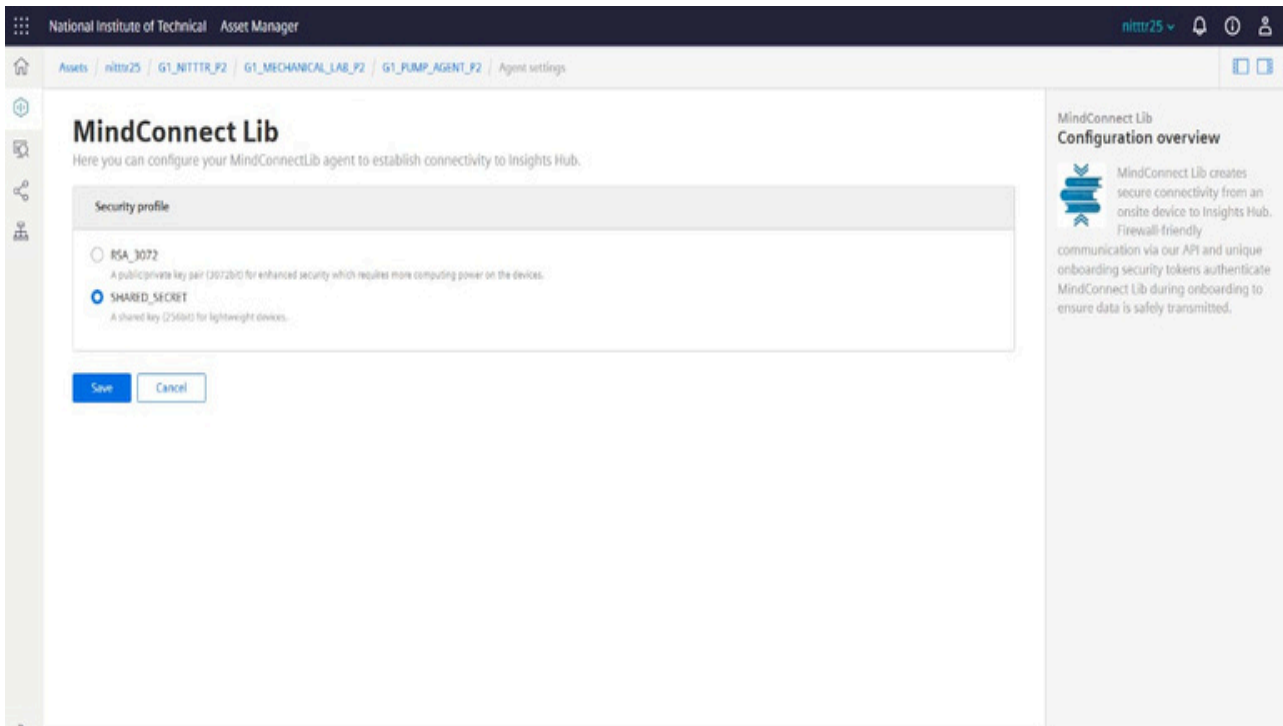
+ Image

+ Variables

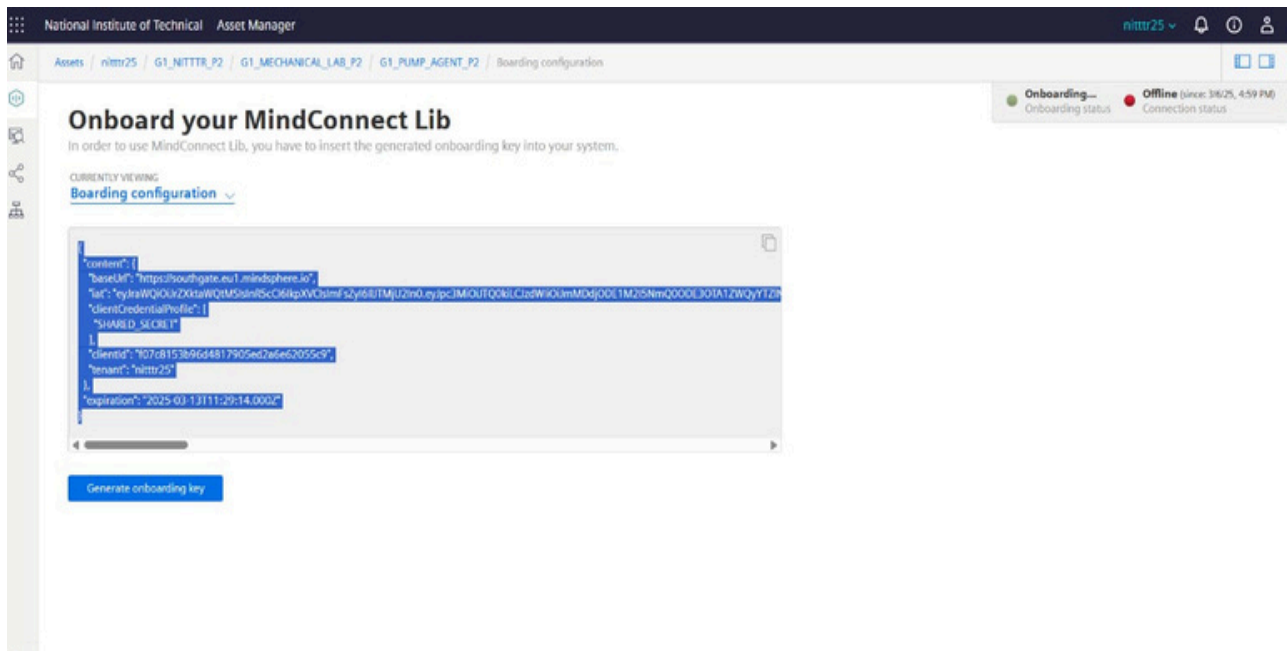
**STEP 20:** Click on connectivity in “G1\_PUMP\_AGENT\_P2” asset



**STEP 21:** Select shared secret and save it.

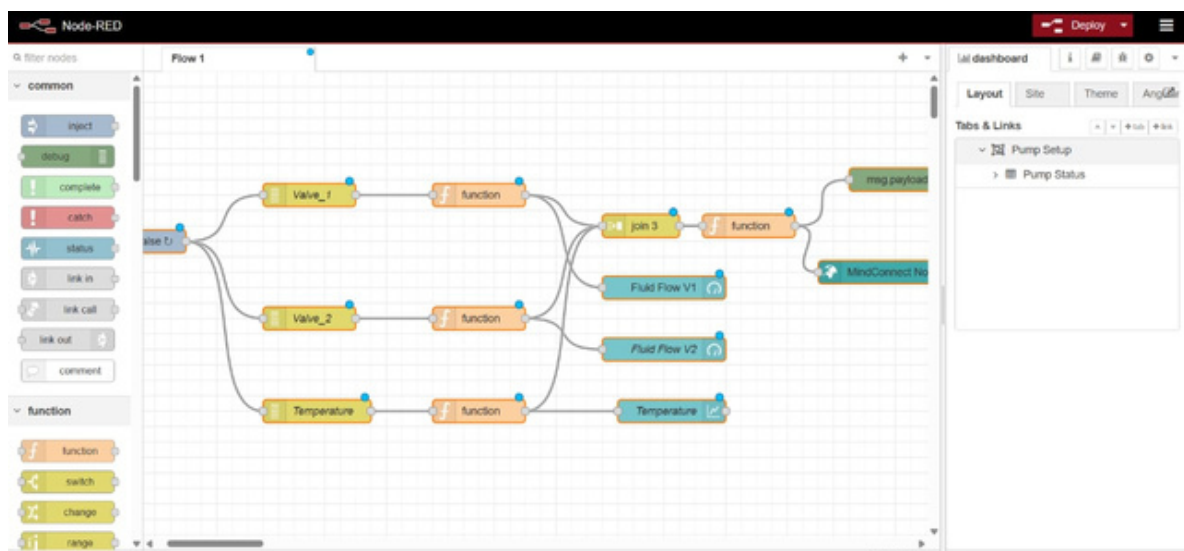


**STEP 22:** Click on generate onboarding key and copy it.

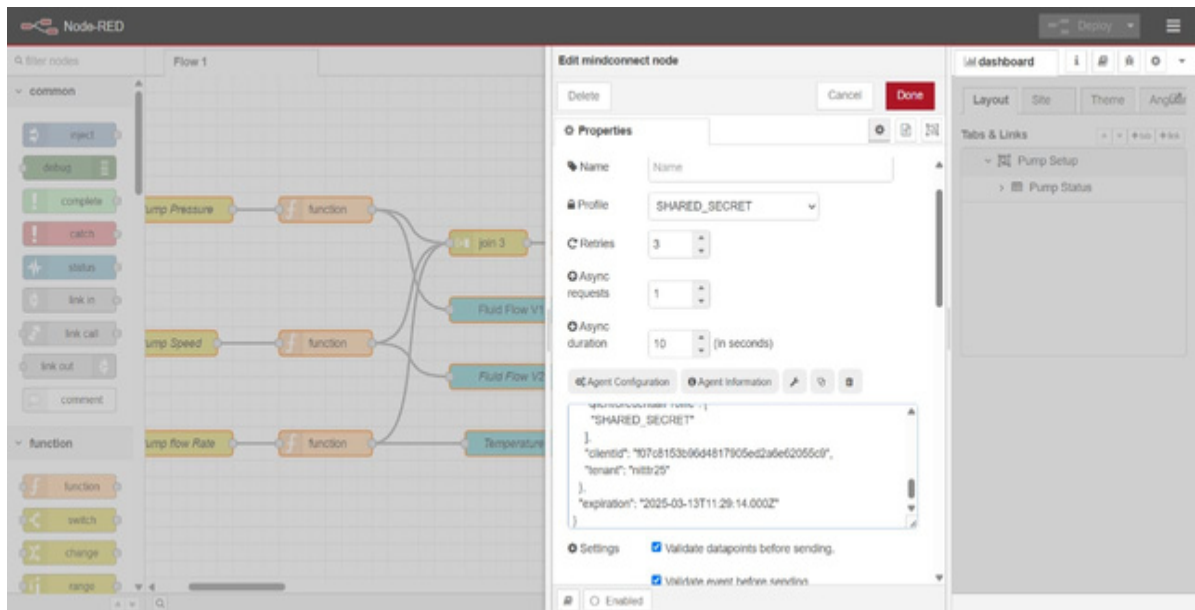


### #3 NODE-RED

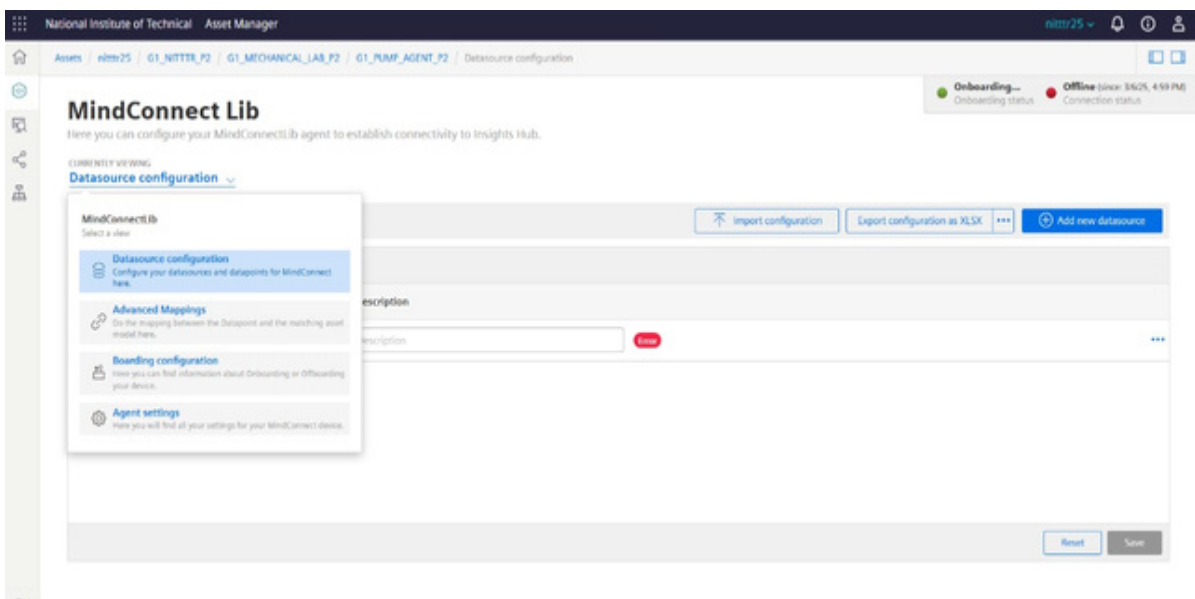
STEP 23: GO to Node-red and click on mindconnect.



STEP 24: Paste your copied onboarding key here and deploy it.

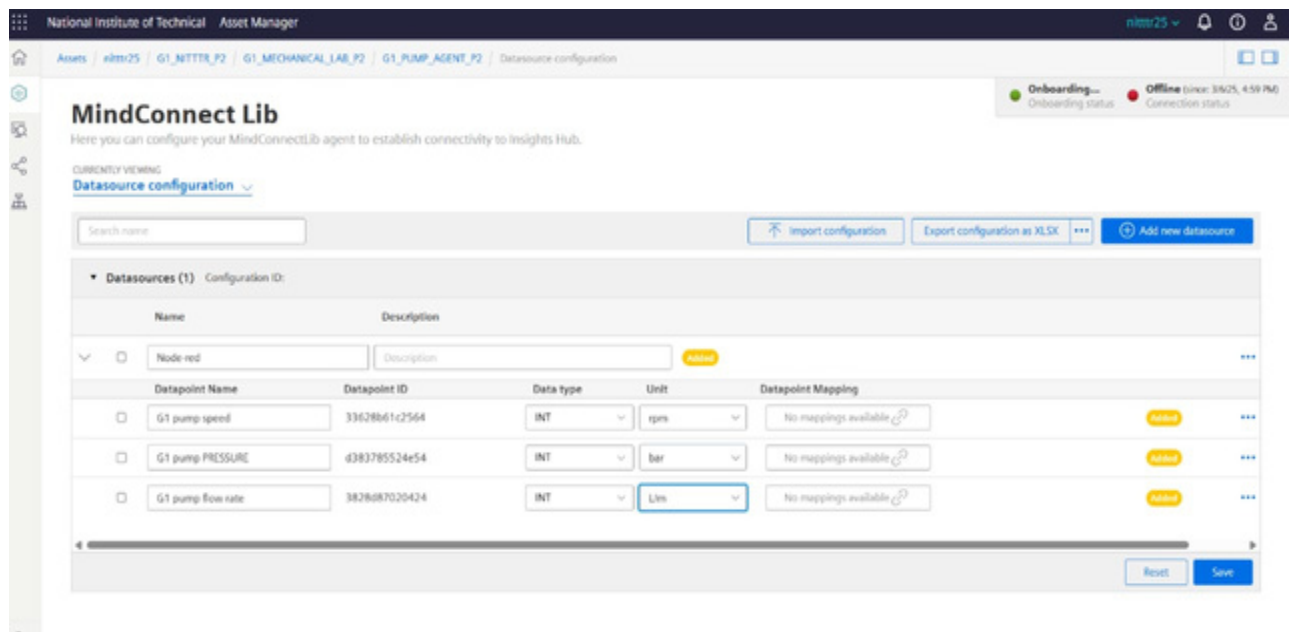


**STEP 25:** Click on datasource configuration





STEP 26: Add a data source and name it “NODE-RED”



STEP 27: Add datapoints and name them as shown.

National Institute of Technical Asset Manager

nitttr25

Assets / nitttr25 / G1\_NITTTR\_P2 / G1\_MECHANICAL\_LAB\_P2 / G1\_PUMP\_AGENT\_P2 / Datasource configuration

Onboarding...

Offline (since 3/6/25, 4:59 PM)

Onboarding statusConnection status

### MindConnect Lib

Here you can configure your MindConnectLib agent to establish connectivity to Insights Hub.

CURRENTLY VIEWING: **Datasource configuration**

Import configuration

Export configuration as XLSX

...

Add new datasource

Datasources (1)

Configuration ID: 1741260851365

Name	Description
<input checked="" type="checkbox"/> Node-red	
<div>Datapoint Name</div> <div>Datapoint ID</div> <div>Data type</div> <div>Unit</div> <div>Datapoint Mapping</div>	
<input type="checkbox"/> G1 pump flow rate	3828d87020424
<input type="checkbox"/> G1 pump PRESSURE	d383785524e54
<input type="checkbox"/> G1 pump speed	33628b61c2564

Reset

Save

## STEP 28: Copy datapoint Ids

National Institute of Technical Asset Manager

nitttr25

Assets / nitttr25 / G1\_NITTTR\_P2 / G1\_MECHANICAL\_LAB\_P2 / G1\_PUMP\_AGENT\_P2 / Datasource configuration

Onboarding...

Offline (since 3/6/25, 4:59 PM)

Onboarding statusConnection status

### MindConnect Lib

Here you can configure your MindConnectLib agent to establish connectivity to Insights Hub.

CURRENTLY VIEWING: **Datasource configuration**

Import configuration

Export configuration as XLSX

...

Add new datasource

Datasources (1)

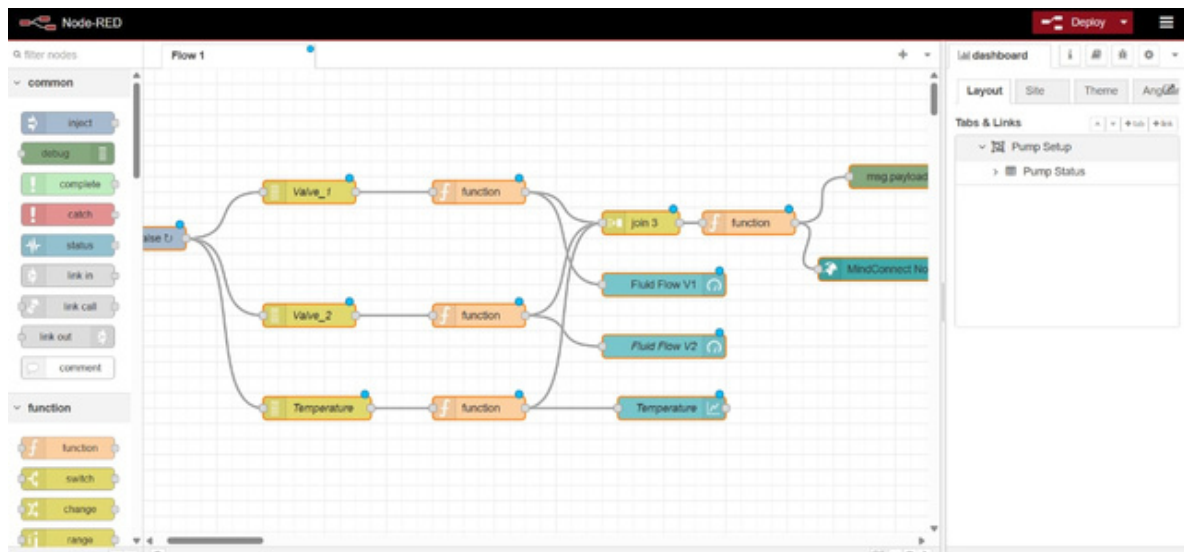
Configuration ID: 1741260851365

Name	Description
<input checked="" type="checkbox"/> Node-red	
<div>Datapoint Name</div> <div>Datapoint ID</div> <div>Data type</div> <div>Unit</div> <div>Datapoint Mapping</div>	
<input type="checkbox"/> G1 pump flow rate	3828d87020424
<input type="checkbox"/> G1 pump PRESSURE	d383785524e54
<input type="checkbox"/> G1 pump speed	33628b61c2564

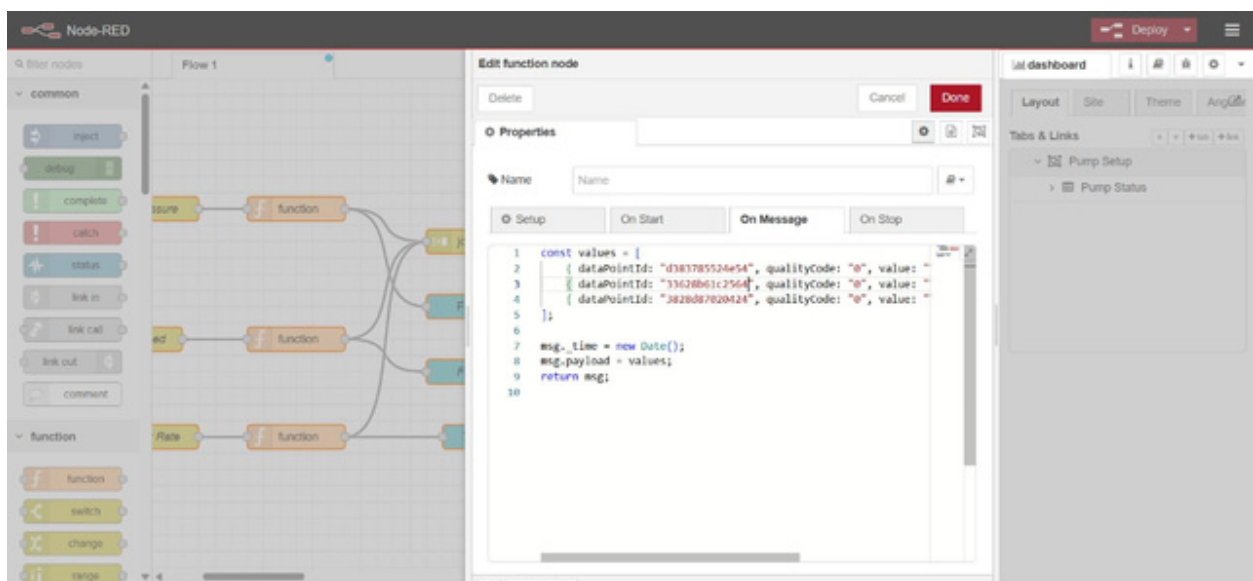
Reset

Save

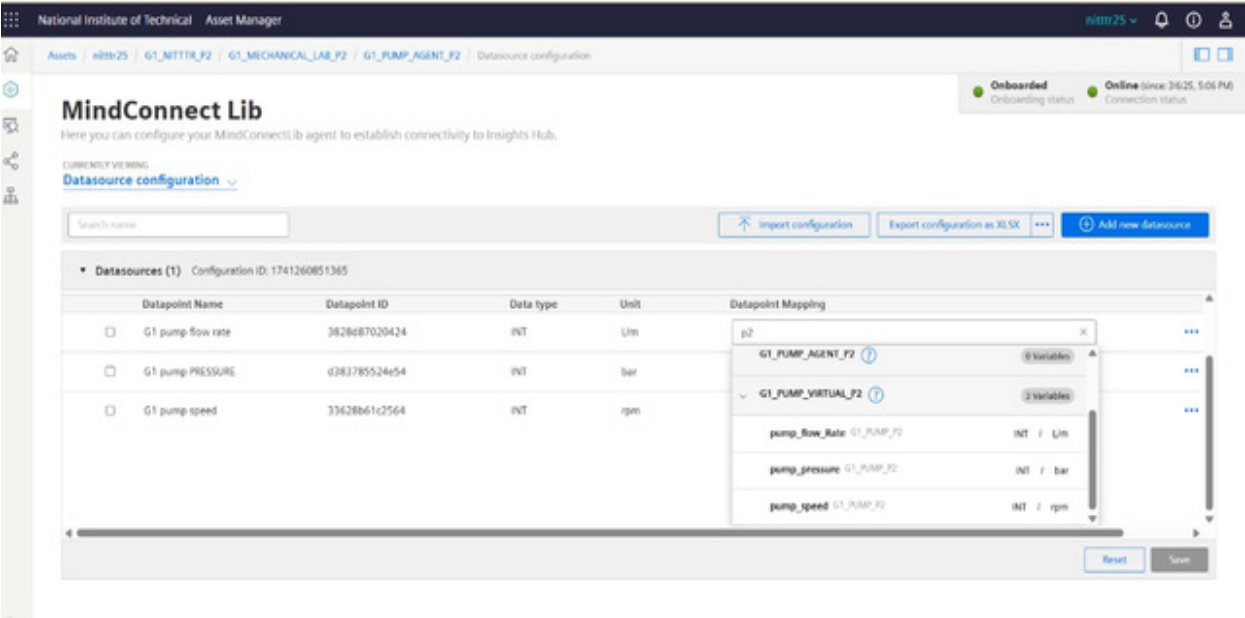
**STEP 29:** Go to node-red and click on function as shown below.



**STEP 30:** Paste those copied ids of data points here.



**STEP 31:** To add mappings , search your virtual asset ..



**STEP 32:** Add mappings accordingly and reset it.

National Institute of Technical Asset Manager nittr25

Assets / nittr25 / G1\_NITTR\_P2 / G1\_MECHANICAL\_LAB\_P2 / G1\_PUMP\_AGENT\_P2 / Datasource configuration

Onboarded  
Onboarding status
 Online  
Online (since: 3/6/25, 5:06 PM)  
Connection status

## MindConnect Lib

Here you can configure your MindConnectLib agent to establish connectivity to Insights Hub.

CURRENTLY VIEWING  
[Datasource configuration](#)

Search name 
[Import configuration](#)
[Export configuration as XLSX](#)
[Add new datasource](#)

▼ Datasources (1) Configuration ID: 1741260851365

Name	Description
Node-red	

Datapoint Name	Datapoint ID	Data type	Unit	Datapoint Mapping
G1 pump flow rate	3828d87020424	INT	L/m	G1_PUMP_VIRTUAL_P2 / G1_PUMP_P2 / pump_flow_Rate
G1 pump PRESSURE	d383785524e54	INT	bar	G1_PUMP_VIRTUAL_P2 / G1_PUMP_P2 / pump_pressure
G1 pump speed	33628b61c2564	INT	rpm	G1_PUMP_VIRTUAL_P2 / G1_PUMP_P2 / pump_speed

[Reset](#)
[Save](#)

**STEP 33:** Go to monitor and click on time series as shown below

National Institute of Technical Insights Hub Monitor nittr25

Home

## Insights Hub Monitor

Analyze Monitor assets with rules, analyze your IoT data

Time Series

Assets

Total

71

[See details >](#)

Dashboards

Total

0

[See details >](#)

Active rules

Total

0

[See details >](#)

Monitoring by rules

Assets with active issues

0

[See details >](#)

Assets under monitoring

0/71

[See details >](#)

Not acknowledged events

0

[See details >](#)

Cases

Open In progress Overdue On hold

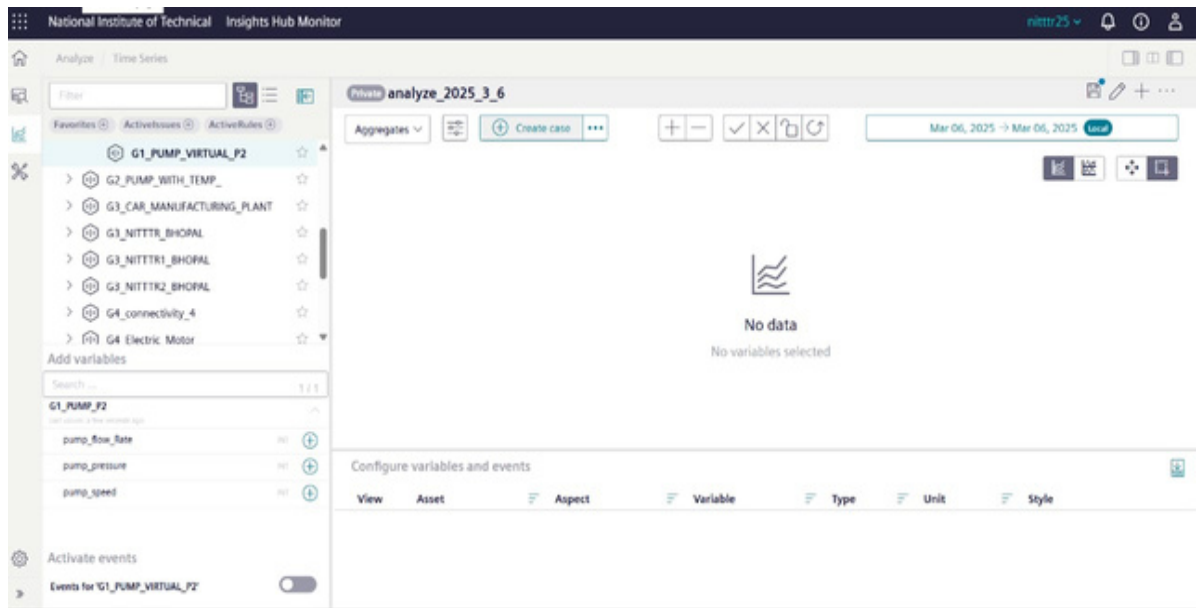
0 0 0 0

[See details >](#)

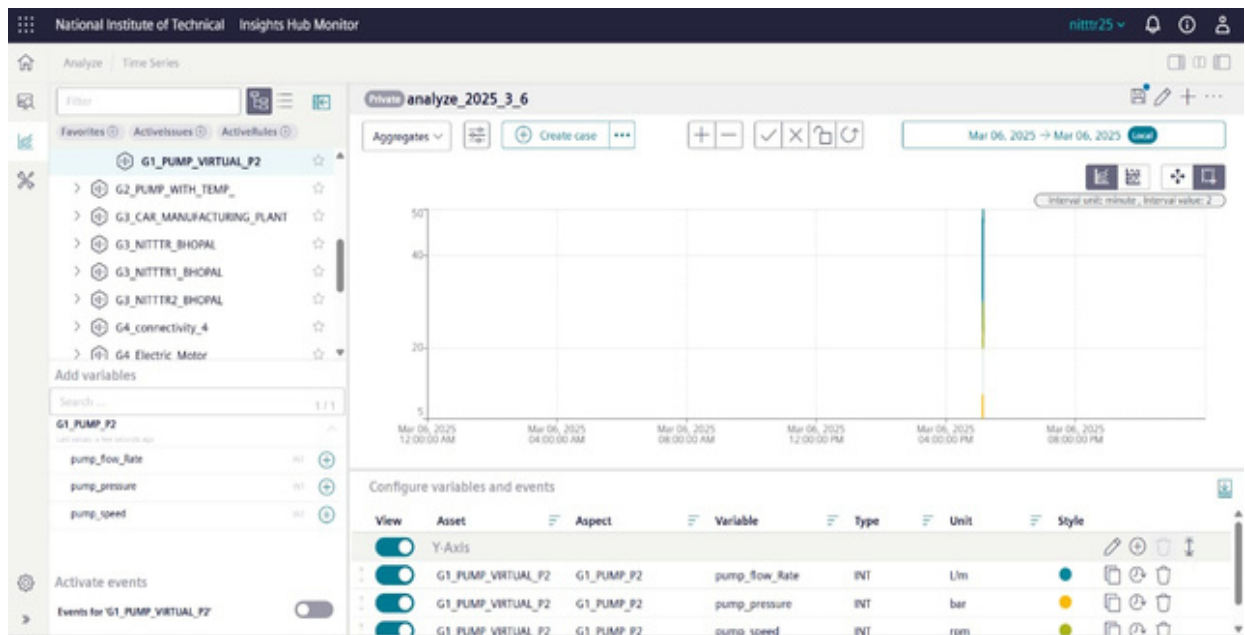
Quick links

- Explore
  - [Explore dashboards >](#)
  - [Explore assets >](#)
  - [Explore events >](#)
- Analyze
  - [Analyze time series >](#)
- Configure
  - [Create new rule for an asset >](#)
  - [Create new dashboard >](#)
  - [Create new KPI >](#)
  - [Create new asset in Asset Manager >](#)
  - [Create new Case >](#)
- Learn

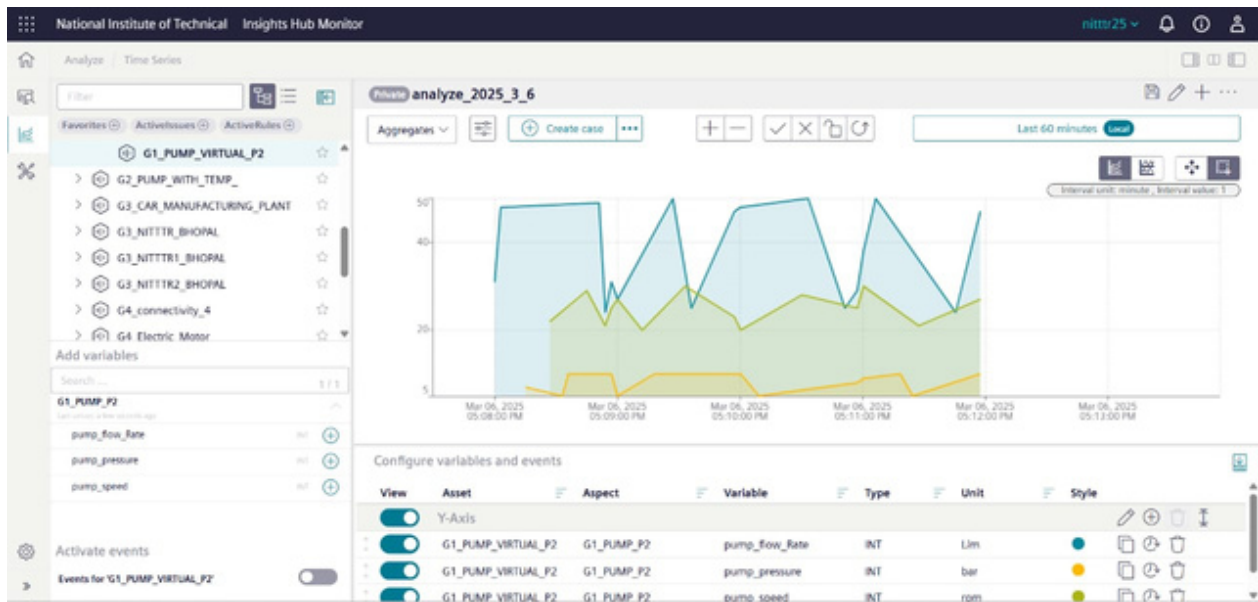
**STEP 34:** Add this variables by clicking on “+”



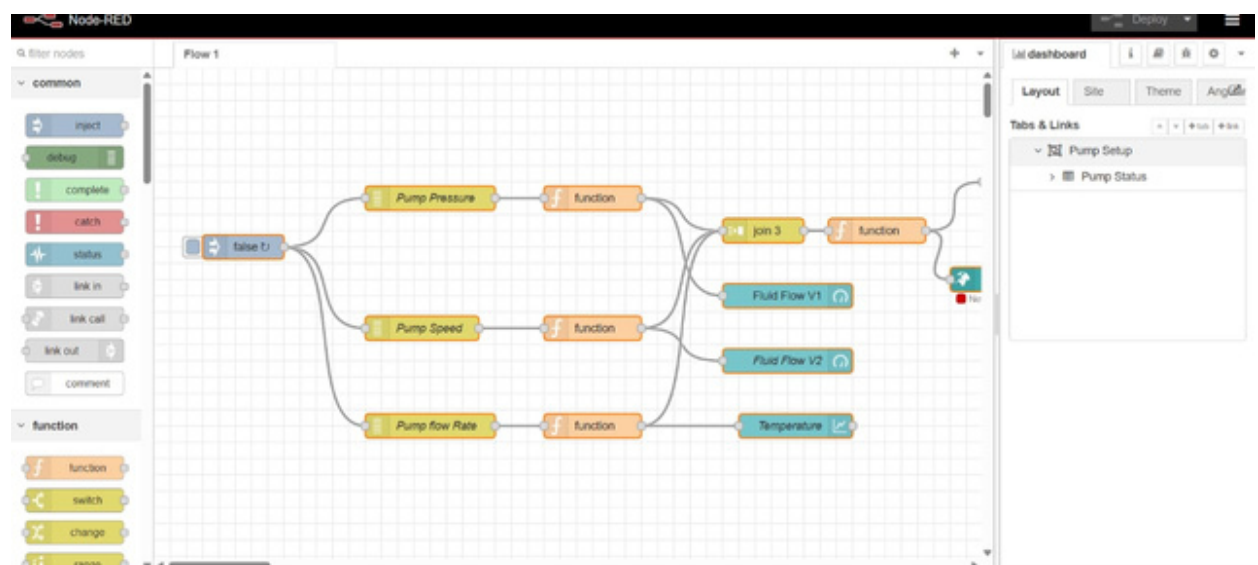
**STEP 35:** It will look like this after adding all variables.



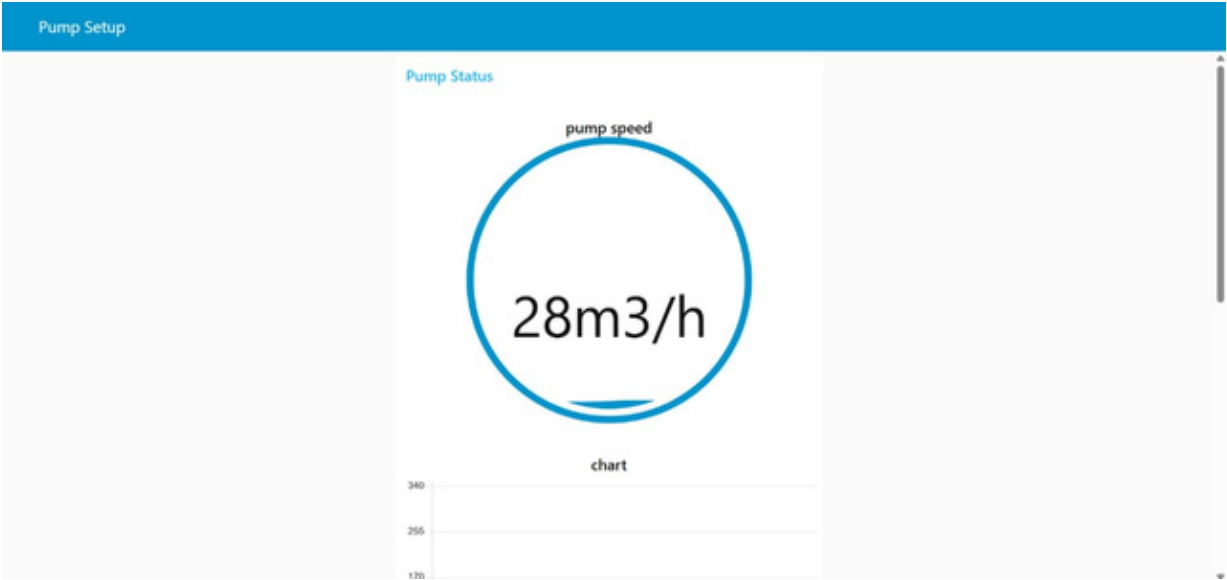
**STEP 36:** Zoom in the graph.



**STEP 37:** Go to node-red dashboard.



**STEP 38:** Pump speed



**STEP 39:** Pump flowrate





## STEP 40: Pump pressure

