

ABB MOTION SERVICES

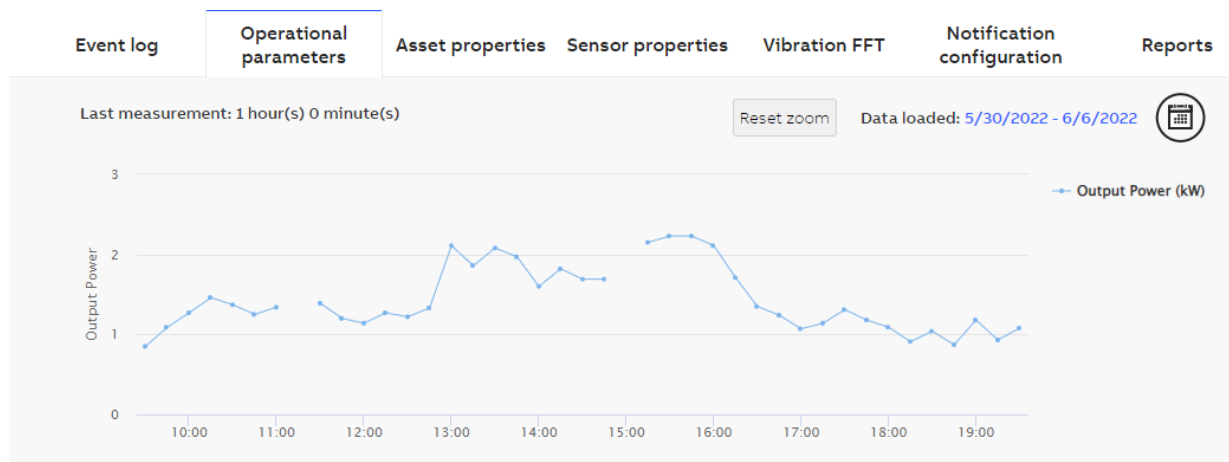
# ABB Ability™ Smart Sensor

## Factors affecting accuracy of estimated output power

### Description of output power

The output power is the power that the motor produces at the shaft. Currently, the output power can only be estimated for asynchronous motors (induction motors).

The output power KPI is designed to estimate output power. There is a filtering mechanism to filter out abnormal power measurements due to unsteady-state loading conditions. If such unsteady loading condition is detected, the filtering can be seen as gaps in the output power curve



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**There are several factors that affect the accuracy of the output power estimated by the Smart Sensor.**

#### **Nameplate details**

Entering wrong nameplate details will result in inaccurate or wrong output power.

There is an allowed error in nameplate speed (+/-20%), which will affect the accuracy of power estimation. This is addressed for ABB motors if the correct serial number and connection type (star or delta) is entered while commissioning

#### **Slip**

The smaller the slip of the motor, the greater the error in output power.

#### **Load**

At low load, motor will operate at a lower slip which will result in higher errors in output power estimation. Power estimation accuracy is lower for motor applications where load changes are frequent.

#### **Temperature**

The output power is most accurate when the motor has reached its stable operating temperature. If the motor temperature has not yet reached a steady state, the output power error is greater. The output power can have an error of approx. 15 percent if a measurement is taken shortly after starting a motor, which temperature is close to room temperature. As the motor heats up to its steady-state temperature, the error decreases.

#### **Speed**

This applies to motors supplied by variable frequency drives. The output power error is greater if a motor operates at a significantly higher or smaller speed than the nameplate speed.

#### **Two weeks learning period of output power**

After commissioning a new asset or upgrading the sensor of an asset, it takes two weeks for the sensor to learn to detect erroneous output power measurements and not show them. Until this time, you may see larger errors in output power.

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