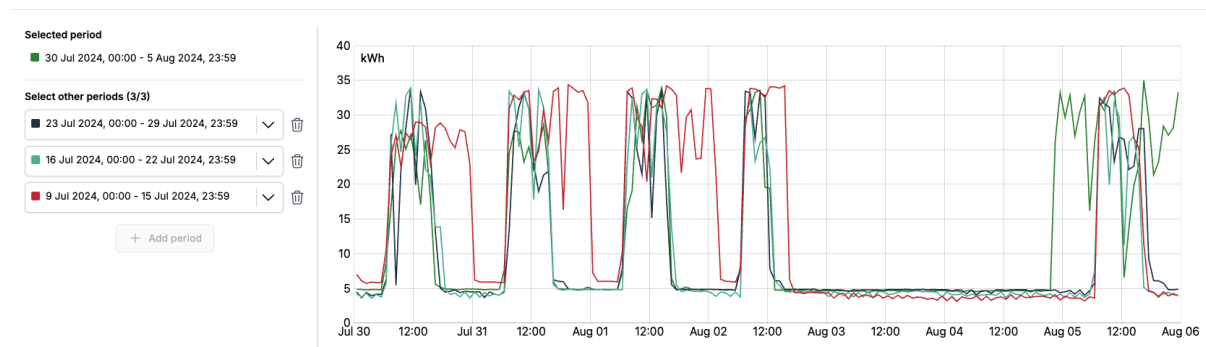


1. Seven day periods

Most sensors show a 7-day recurring pattern. Identify deviations from that pattern. Analysis is done per-sensor with neighbouring 7-day periods. The number of lookback periods should probably be 3-5 weeks.

Example:

Site A, 3210-Fiberlaser



2. Base load analysis

Base load analysis to differentiate idle/production modes from base load. Establish base load level and identify periods when in base load. Then overlay this 0-1 pattern with the same data from other sensors to see if the patterns align or if there are deviations. Idea is to catch anomalies even though the actual usage pattern may be varying (not strict 7-day recurring).

3. Identify state of operation

Identify the state of operation for a machine/sensor. Identifying these states must be done over a longer period of time, typically a rolling 30 day interval. This state identification makes more sense for certain sensors. Some of these are annotated in the Excel file for the data sets.

The following states are valid for quite a few of our customer's sensors:

- **Base load** - The minimum level consumed by a machine. This is not as simple as saying the lowest observed level but rather the stable minimum over time (the 30 days mentioned above).
- **Idle** - A stable power consumption level that is higher than the base load. Within an idle period, there should be no power peaks, just a higher "plateau".
- **Production** - High and varying energy usage.



Output: Time periods when the sensor is operating in the three different states plus a quantification of the base load level (a number).