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Tot bij u

Usage of maximum demands

Month peaks

Inhoudstafel

1   Introduction

The Flemish regulator for energy, introduced a change the way the distribution grid tariffs are calculated[1].

Until now, the tariffs are determined as an amount based on the energy consumption of the consumer. This means that per kWh the consumer "consumes", the consumer pays a fee for the usage of the grid.

In the future, this will no longer be the case and the distribution grid tariffs will be calculated based on two parameters:

- X% based on the energy consumption as before
- Y% based on an average of maximum demands (month peaks) during one year (= used capacity)

To support this new calculation method, the digital meter measures average demands and provides them to the central system. Next to this, the digital meter will also include extra datapoints in the P1 telegram and on the display.

The extra datapoints on the P1 will make it possible for the CEMS (Central Energy Management System) to show them to the consumer, pro-actively steer the energy consumption to avoid peaks, etc.

This application note gives some insights in the implementation on the P1 interface

2   What is a month peak, the average year peak and how is this measured?

A month peak also called the **maximum demand of the month**, is defined as the **maximum 15 minute average power taken from the grid that month**. The averaging is done over fixed intervals, starting and ending every 15 min.

The digital meter starts **every month a new determination of the month peak** of the new month. The reference for this measurement is the internal clock of the meter and is measured as described beneath.

The digital meter starts **every 15 minutes a new averaging based on the internal clock** of the meter. This means that it starts at xxh00 and ends at xxh15, starts at xxh15 and ends at xxh30, starts at xxh30 and end at xxh45, …

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[1] *For more information on the calculation of the new distribution grid tariffs, visit the website of the VREG on www.vreg.be*

At the end of every averaging period (so at the end of the 15 minutes interval), the digital meter **looks** if the averaged value is **higher than the highest averaged value so far** in that month:

- **If yes**, the digital meter **stores the new averaged value** as the maximum of the running month (overwrites the highest averaged value so far in that month)
- **If no**, the digital meter **does nothing with the averaged value** (does not overwrite the highest averaged value so far in that month)

At the end of the month, the digital meter **stores the highest averaged value of that month** as the month peak of the month (finished) and resets the registers to start a new month.

The meter is storing the month peaks for at least one year and provides them to the central system for calculation of the average year peak, used in the billing for the consumer.

The **year peak** is defined as the **average of the month peaks of the twelve previous months** (at time of billing).

Note: The internal clock of the meter is the reference for this. The internal clock is also part of the P1 telegram. It can happen that the meter clock is several seconds of from the internal clock of the CEMS. For calculation of the maximum demands (month peak), the meter clock is the only correct reference.

Note: the average month peak is only taken the off-take direction in to account. That means that peaks in injection direction is not taken in to account for calculating the new distribution grid tariffs.

Note: For the maximum demands the digital meter act as a totalizer. This means that first all phase powers (vectors) are added and then the result is added to the register. Expl:

L1 = -500 W, L2 = +600 W, L3 = 1000 W. This means that the total power (used as input for the averaging) is + 1100W.

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3 Published values on the P1 related to month peak

3.1 Current average demand – active energy import (1-0:1.4.0*255)

This datapoint gives the **average power so far for the current 15 minute window**. This means that it gives the average value for the 15 min. that is not yet ended. This value can be used by the CEMS to actively steer consumption to keep the 15 min. average of this 15 min. as low as possible, preferably keeping under the highest averaged value of the running month so far.

This datapoint makes pro-proactive steering within the 15 min. possible.

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3.2   Maximum demand – active energy import (1-0:1.6.0*255)

This datapoint gives the highest averaged value of the **running month** so far. This is the result of an averaging of a previous (closed) 15 minute window. Steering this value is not possible anymore. It's the maximum for the month so far.

This datapoint gives the CEMS information on the level of the month peak so far. If the current 15 minute window is approaching this level, it can be beneficial to steer the consumption to avoid an higher average value than already registered this month.

Note: this value also includes the interval end timestamp to which interval the value belongs to.

3.3   Maximum demand – active energy import profile (1-0:98.1.0*255)

This datapoint is a list of the **maximum demands (month peaks) of the closed months.** Steering this value is not possible anymore.

This datapoint gives the CEMS information to calculate / predict the year peak.

Note: this value also includes the interval end timestamp to which interval the value belongs to.

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