Dynamic Peak Manager
In Fronius SnapINverters

White Paper

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SHADING ON PV SYSTEM

/ Shading on a PV string causes a reduction of the output power which results in less yield of a PV system.

/ With conventional MPP trackers it is difficult to determine the global Maximum Power Point (GMPP). Often the GMPP is not detected because the tracker has wrongly identified the local Maximum Power Point (LMPP) as the maximum for the entire characteristic. The Dynamic Peak Manager always finds the global maximum because it regularly checks the entire characteristic of the MPP tracking curve.

/ The Dynamic Peak Manager is a new MPP tracking algorithm that dynamically adapts its behaviour when searching for the optimal operating point. By checking the entire characteristic curve on a regular basis the Dynamic Peak Manager finds the global Maximum Power Point (GMPP), even in partial shade.
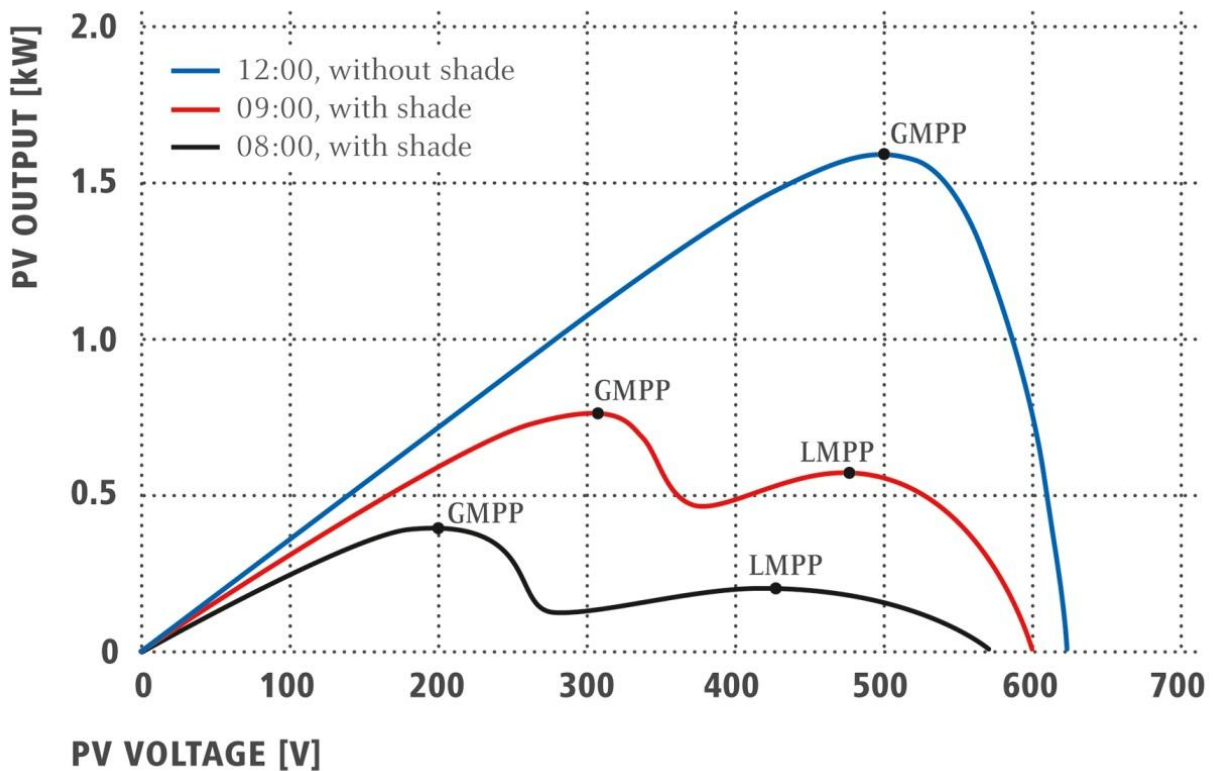

Figure 1. Power/Voltage diagram of a shaded PV system

TEST INSTALLATION

A 4kW residential test installation shows the impact with and without the Dynamic Peak Manager (DPM).
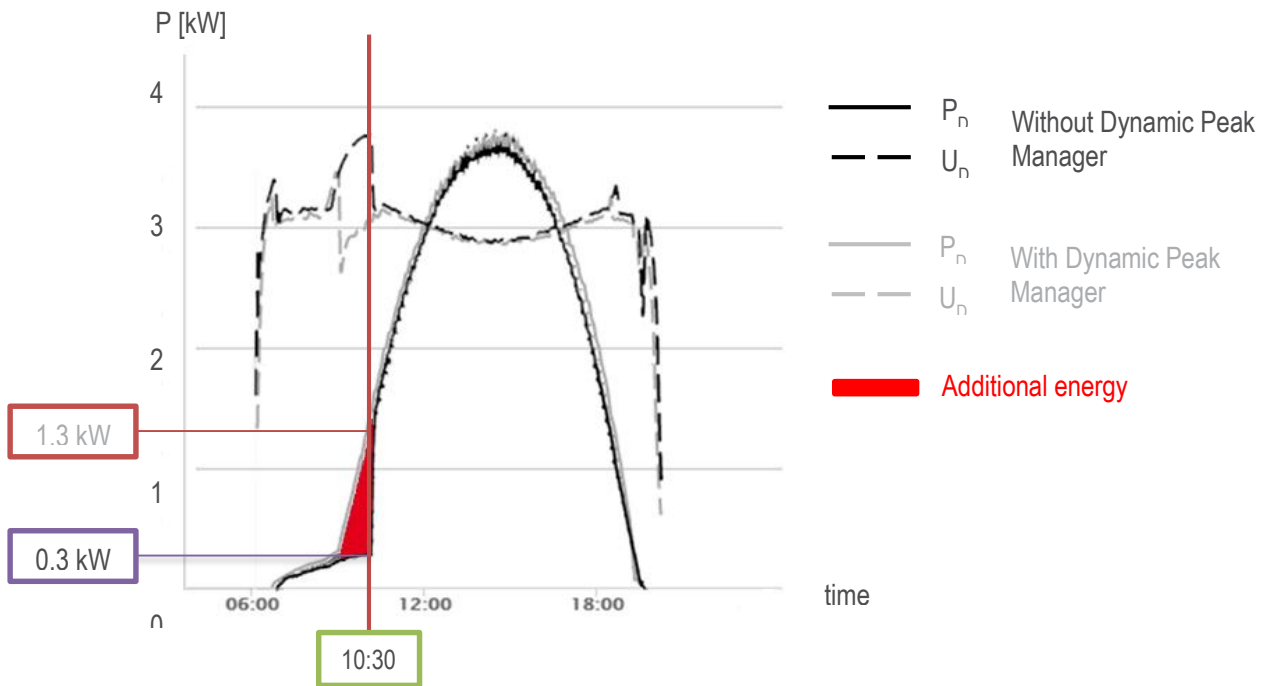

Figure 2. PV production curve of a PV system with and without DPM

The result:

Daily yield without Dynamic Peak Manager:	26.0 kWh
Daily yield with Dynamic Peak Manager:	26.5 kWh
Additional energy	**0.5 kWh = + 1.9 %**

On this day the installation with DPM produced 0.5kWh more energy which is an equivalent of 1.9% compared to without DPM.

TYPICAL SITUATIONS FOR DYNAMIC PEAK MANAGER

Shading from chimney

A daily average of 1h shade in the morning or evening caused by a chimney is estimated to result in a 1-2% additional annual yield when using the Dynamic Peak Manager.
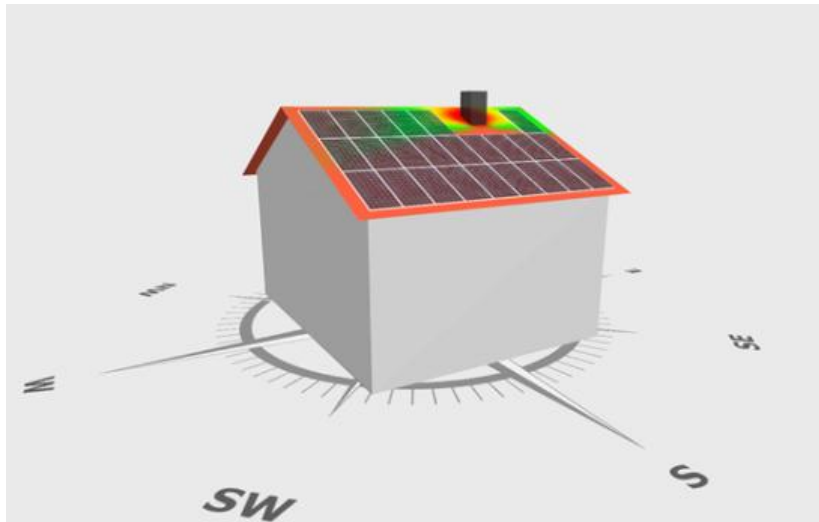

Figure 3. Shading from chimney*

Shading form dormer

A daily average of 1h shade in the morning or evening from a dormer is estimated to result in a 2-4% additional annual yield when using the Dynamic Peak Manager.
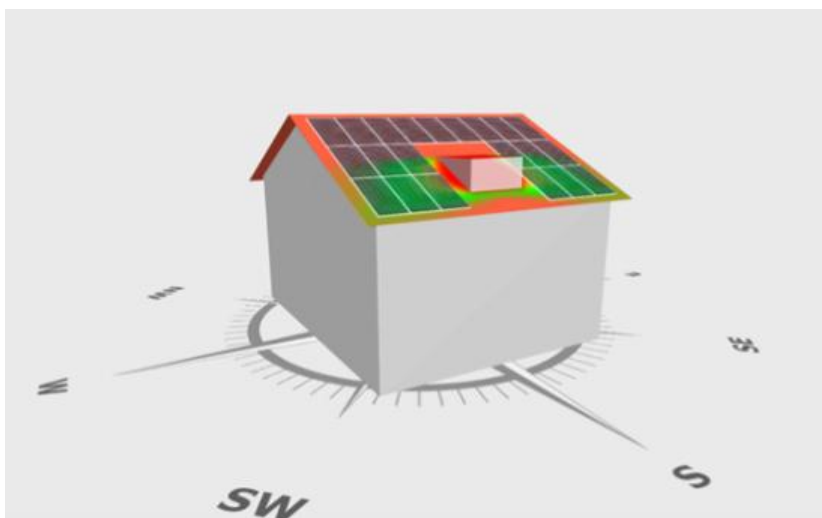

Figure 4. Shading from dormer*

* Graphics show installation on northern hemisphere