

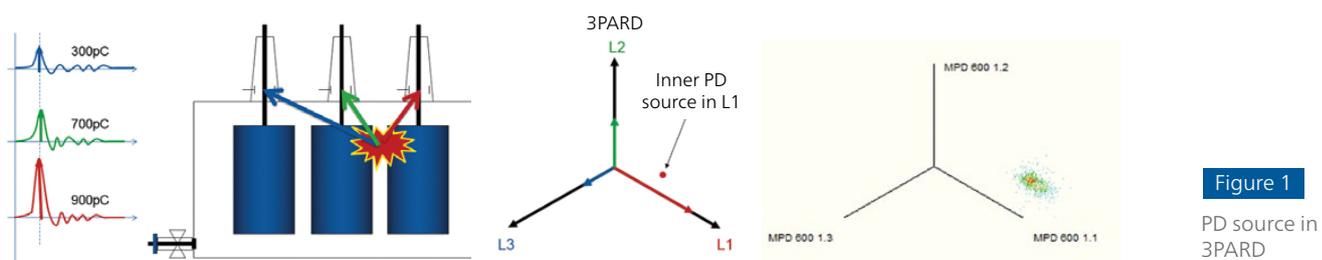


Advanced Noise Separation with 3PARD/3CFRD

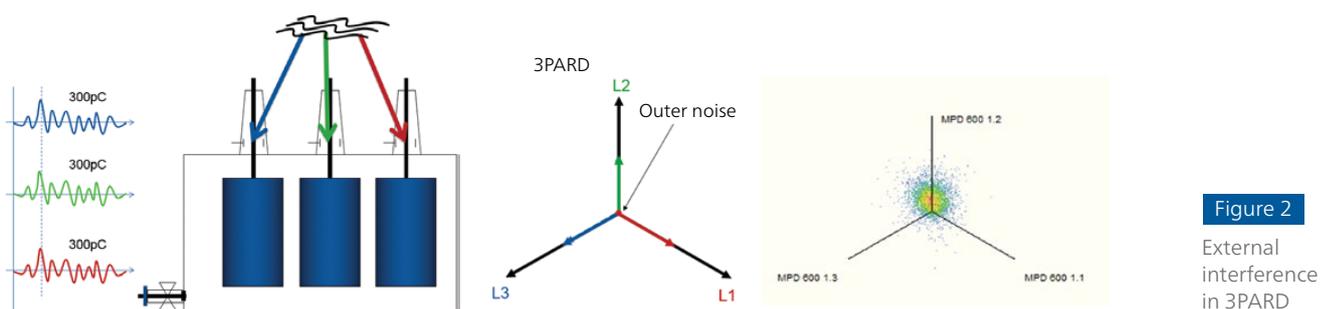
Partial discharge (PD) events on one phase can also be detected on the other phases. Making a distinction between different PD sources and superimposed noise pulses is a challenge due to this coupling. The OMICRON MPD 600 PD measurement and analysis system provides users with the following powerful tools for the separation of different sources of interference and easy data visualization:

3-Phase Amplitude Relation Diagram (3PARD)

The 3-phase amplitude relation diagram (3PARD) simplifies the differentiation of various PD sources and PD interferences. The three phases are measured synchronously. The results are displayed and combined in a single 3PARD diagram. Figure 1 and Figure 2 show you how the 3PARD diagram works:



In Figure 1, the transformer has a PD source on phase L1 of 900pC. This PD signal is also coupled to other phases (L2 and L3) and measured at the same time, but at a lower value. Based on the amplitude on each phase, the cluster will be formed near Phase L1.



In Figure 2, external noise couples in every phase with an equivalent value. The vector addition will result in a cluster at zero. If the noise does not couple symmetrically in the test setup, the cluster will shift to around zero at the axis.

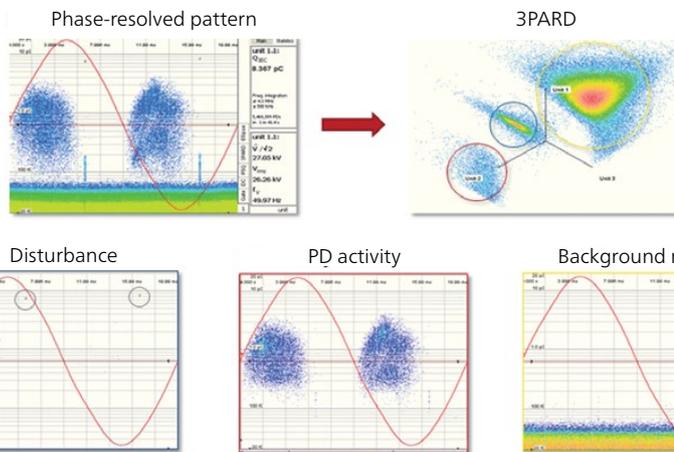


Figure 3
Example of 3PARD

Figure 3 shows three different clusters in the 3PARD. The transformation of the clusters allows users to distinguish PD signals from the disturbances and background noise.

3-Center Frequency Relation Diagram (3CFRD)

The 3CFRD characterizes PD sources by their frequency signature. Even for a single phase, or a single PD decoupling position, pulse triples can be acquired by using three different PD filter settings. The synchronous signal output from three filters with different center frequencies is visualized in a 3-Center Frequency Relation Diagram (3CFRD) for pulse waveform analysis.

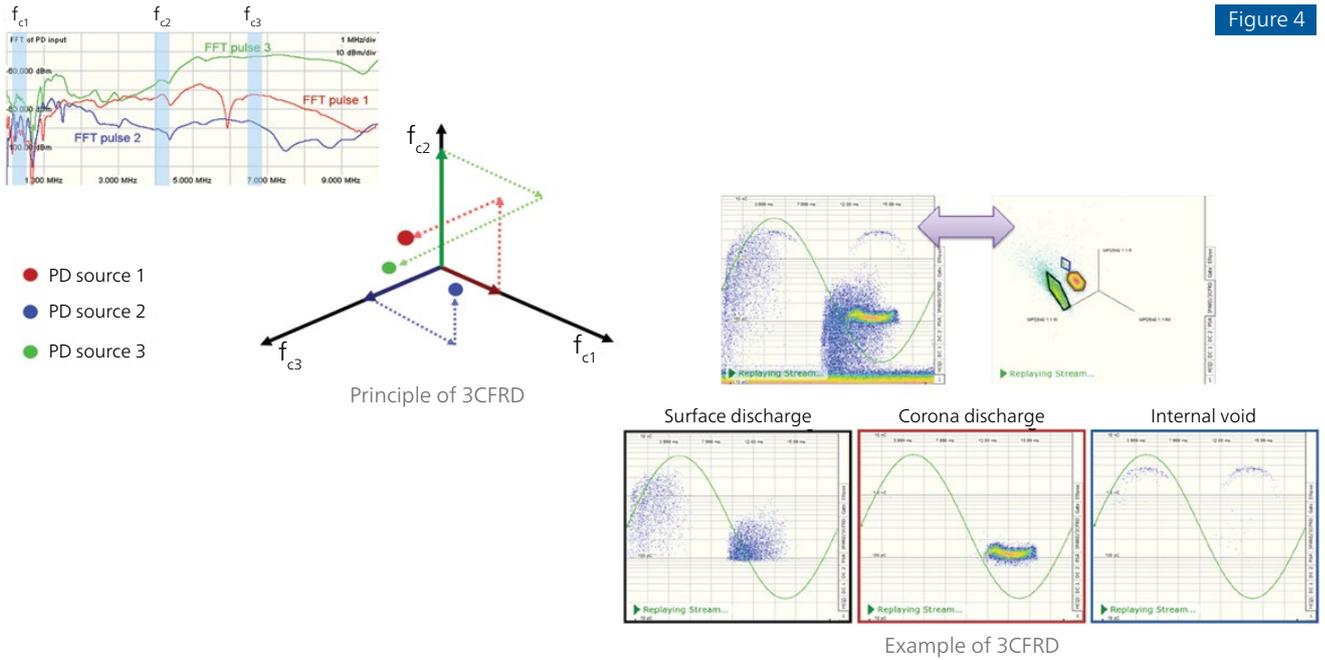


Figure 4



Please click [HERE](#) or scan the QR code to watch our PD video on Youtube.

More information about the MPD 600 PD measurement and analysis system is available at:
www.omicronenergy.com/mpd600

Hands-on training is also available from OMICRON Academy, where you can learn how to perform PD measurement and analysis on a variety of electrical assets. Please click [HERE](#) for more information.