

PF CORRECTION FOR HIGHLY FLUCTUATING LOAD PROFILE – DPFC SYSTEM

PREAMBLE

Client had expressed their interest in improving the PF at Feeder and thereby avail the benefits of reduced apparent current stressing the cables and reduction of kVA. Hence Load Flow Study was conducted to identify the Load Profile and recommend a suitable system.

SITE ANALYSIS

Parameters	Readings logged
KVA	120
KW	100
KVAR	66
P.F	0.83
Current (amperes)	170

OBSERVATIONS AND INFERENCE

The analysis of the readings recorded during the time of measurement shows that the instantaneous PF of 0.83 is less. The trend of the Reactive Power shows a highly fluctuating load profile.

The Level of Voltage and Current THD are within the limits of IEEE Standards for Harmonics.

SYSTEM DESIGN AND RECOMMENDATION

For the Fluctuating Load Profile recorded, the system needs to be implemented as a Dynamic PF Correction System, a centralized PF Correction System at the MV Panel.

In order to improve the PF from the existing level to 0.97, the DPFC Systems is designed to provide an output of 120 kVAR, with minimum step and configuration suiting the Transformer Compensation and base load compensation requirements.

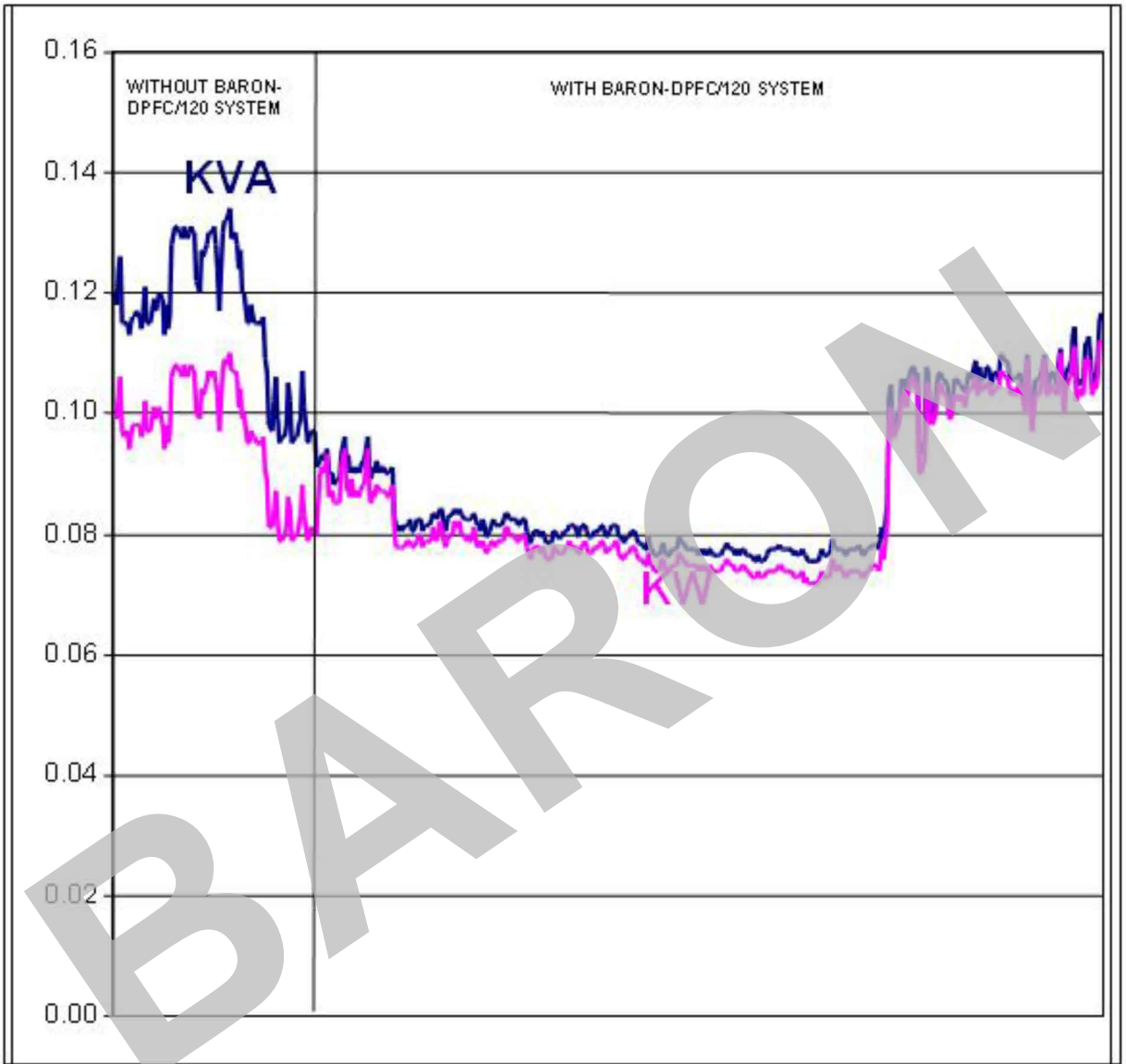
PERFORMANCE

Parameters	Savings
KVA Reduction	20 KVA
Current Reduction with DPFC	30 Amps
PF	0.97
THD Voltage Harmonics	2.00%
THD Current Harmonics	7.50%
Improvement in Voltage Profile	2 Volts

POWER PARAMETERS

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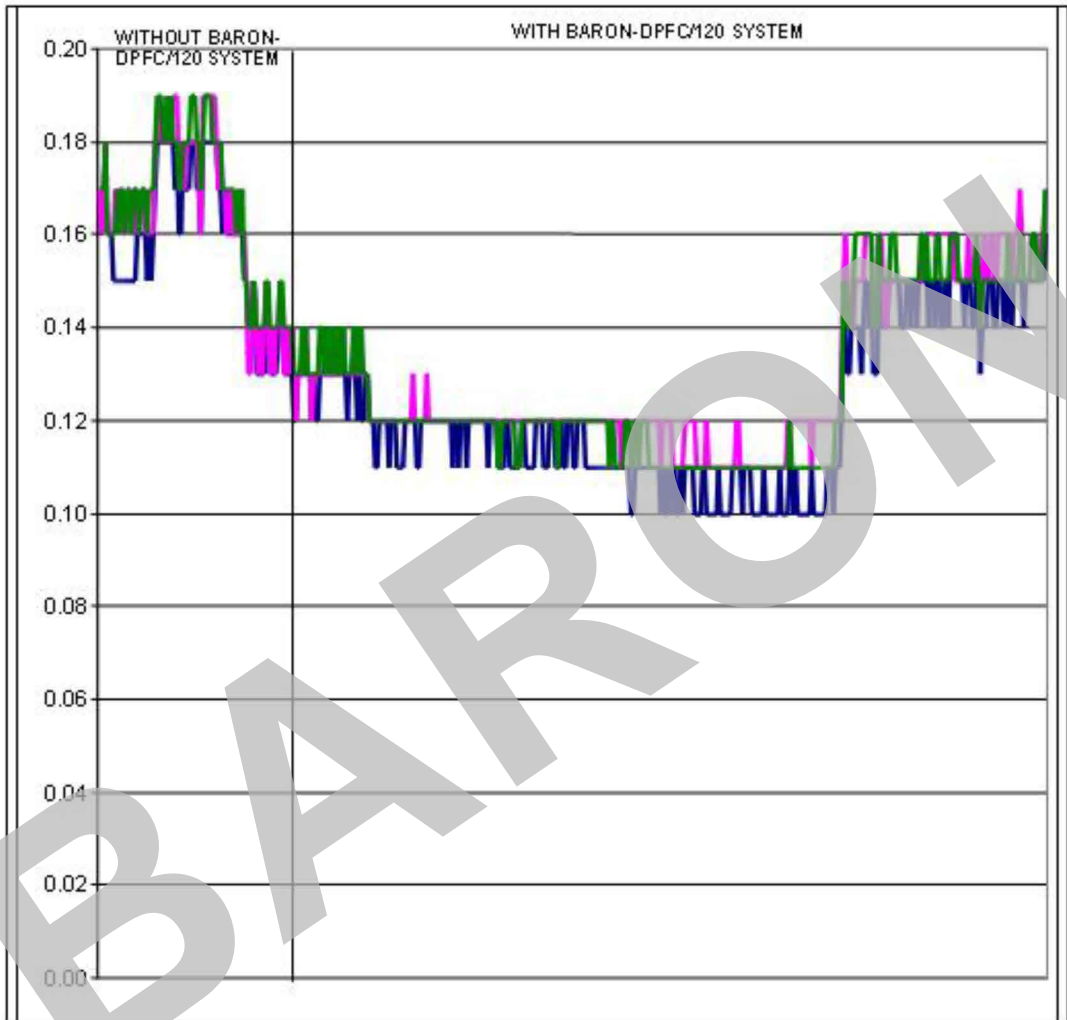
POWER FACTOR



Without DPFC System the power factor is low, leading to higher net current.

With DPFC System, the power factor is stabilized at 0.97, thereby having reduction in Net Current. Without DPFC System, the power factor is at 0.82.

PHASE CURRENT



The Level of Nett Current is brought down by 30 amps with DPFC, throughout the recording period. The Load Currents are stabilized with DPFC, thereby improving the Voltage Regulation.

BENEFIT

On implementing the DPFC System, the Apparent Current has reduced by 30 A and the kVA has reduced by 20 kVA.