

Improved Operation Reliability in a Dairy Production Facility

The availability of products to customers in production industry is largely determined by how consistently operations run. Manufacturing will be disturbed if production equipment is not efficient and dependable, which will then have an impact on availability, client happiness, and ultimately, corporate revenue. Production processes are frequently automated and require a consistent supply of power to allow normal and continuous process operations. Harmonic distortions and voltage disturbances can occur in industrial facilities. With the help of our solutions, power quality-related issues could be mitigated on top of noticeable power factor improvements which saved thousands of dollars on customer's bills annually.



• Challenges in the factory

The customer was prone to frequent electronic device failures, excessive heating of the cables and transformers, and nuisance tripping. The plant manager listed these as a few of the issues. Once we found the root causes of these problems by a power quality audit, the harmonic current distortion was observed to be very high at the site because of so many non-linear loads. Also due to higher than usual occurrences of voltage disturbances, ensuring the best-in-class reliability of highly important operations remained difficult. Based on the gathered data, we designed a tailor-made power conditioning solution addressing their issues.

• Our Tailor-Made Solution

The system was first sized as per client's existing loads. However, the operation manager also sought to account for a potential growth in the future. In order to make our solutions future-proof, they were resized to meet the forecasted expansions in the manufacturing line.

Thus, we could provide an ease of mind for the operations team that they won't face previous power quality issues again even if the operations are expanded.

We can design the system's infrastructure, such as the cables' cross sections, cabinets' dimensions, the controllers, etc., in a way that the client can simply request system improvements in the future even if they don't want to enlarge the system at first. The system will then be ready to use for several more years after we just add more stages to the existing cabinet.



• Performance M&V (Measurement & Verification) Test Results

The data summarized here is based on -1minute samples from ON and OFF data taken from the client’s main switchboard.

Phase	Voltage		kVAR (TOT)		PF (TOT)	
	Min	Max	Min	Max	Min	Max
PC ON	612.47	613.20	40.94	50.86	0.98	0.98
PC OFF	604.87	606.07	226.72	251.14	0.78	0.81
Difference	7.60	7.13	-185.78	-200.28	0.19	0.17
% Change	1.22%		-80.79%		22.69%	

We can easily see the following important findings from the table:

- 1) Voltage and power factor at the transformer are improved by around %1.22 and %22.69 respectively.
- 2) Reactive power demand at the transformer is reduced by around %80.79.

