

CASE STUDY

The Principal Financial

Group

Des Moines, IA

+ Company

The Principal Financial Group® is a leading global financial company offering businesses, individuals and institutional clients a wide range of financial products and services. Their range of products and services includes retirement solutions, life and health insurance, wellness programs, and investment and banking products through a diverse family of financial services companies and a national network of financial professionals. Their global corporate headquarters is in Des Moines, Iowa.

+ Challenge

A distribution transformer was found with unacceptably high operating temperatures in one of their head office campus buildings. The overheated transformer was causing high electrical room temperatures. In addition to these temperature problems, the transformer was producing unacceptably high noise levels. It was suspected that these temperature and noise problems were the result of load-generated harmonic currents. With a 114kVA nonlinear load, the conventional 300kVA distribution transformer's calculated 6kW linear load losses had increased to 8.5kW nonlinear load losses, a 42% increase. The transformer's higher losses caused the average temperature in the electrical room to increase from an ambient of 73°F to 91°F, an increase of 18°F. The increase in transformer losses had also reduced the transformer's published linear load efficiency from 95% to 92.5%, a decrease of 2.5%.



+ Solution

PQI proposed the application of an ultra-high efficiency e-Rated®, harmonic mitigating Distribution TransFilter™. Under the same loading conditions, PQI guaranteed 2kW of nonlinear load losses, compared to the original transformer's 8.5kW of nonlinear losses, a 6.5kW projected reduction.

+ Impact

The replacement transformer's significantly lower load losses resulted in a reduction of the average electrical room temperature increase above ambient. The actual room temperature dropped from 91°F to 73.6°F with the application of our Type DV Distribution Transfilter in lieu of the K-1 transformer that was previously in service. Because of lower non linear load losses, the Type DV has produce an energy efficiency of 99.2%, an increase of 6.7% over the efficiency of the original. This increase in transformer efficiency produced a 5.3 month "payback" and a 228% return-on-investment.

CASE STUDY • THE PRINCIPAL FINANCIAL GROUP • DES MOINES, IA

POWER QUALITY INTERNATIONAL is the industry leader in the development, design and manufacturing of harmonic mitigating and energy-efficient transformer technologies. With a passion for solving problems and helping customers achieve power quality and energy efficiency, PQI delivers cost-effective solutions that ensure power quality and energy efficiency for the life of their customers facilities.

