

Spang Power Electronics

PROJECT PROFILE



System Operation

Each system consists of a 950 KVA, three (3) phase, rectifier-transformer and two 6-pulse, water-cooled bridges. One remote control console, with switches and visual alarms, controls all five rectifiers. The transformer in each system isolates the line from the load and steps the 12,470 volt input down to 82.7 volts. A dual wound Delta-Wye secondary splits the output into two, 30° phase shifted voltage sources. A 6-pulse SCR water cooled bridge, connected to each secondary, rectifies the output into 12-pulse DC. To ensure equal sharing between two bridges, each system incorporates an interphase transformer.

Cost Advantages of the HV Rectifier-Transformer

The capability of Spang Power Electronics to manufacture high voltage transformers, enabled Meyer to reduce their costs, simplify installation and minimize space requirements. Meyer's power distribution system supplies 12,470 volts while anodizing rectifiers typically accept only low input voltages. Eliminating the need to purchase an additional step-down transformer was a major reason why Meyer chose Spang Power Electronics over the competition.

800 KW 12-Pulse Anodizing Rectifiers for Meyer Cookware Industries

Spang Power Electronics designed and manufactured five 800 kw, 12-pulse, anodizing rectifiers for Meyer Cookware Industries' new Vallejo, California plant. Each rectifier will be used on an automatic hoist line in a hard coat anodizing application. These rectifiers can continuously supply 8000 ADC at 100 VDC with taps at 80 VDC. The taps allow the user to reduce output voltage while maintaining a high power factor. The 12-pulse design can deliver a high current output while minimizing input harmonics and output ripple. This results in lower total energy costs and higher product quality.

12-Pulse v. 6-Pulse Design

The 12-pulse design minimizes input harmonics caused by the wave chopping effect of the rectifier. This voltage distortion reflects upstream into the power delivery system and may adversely affect other loads supplied by the same system. This effect becomes substantial when one power system supplies all five rectifiers. The 12-pulse design also reduces output ripple. As a result, the smoother output produces a higher quality product than conventional 6-pulse designs.