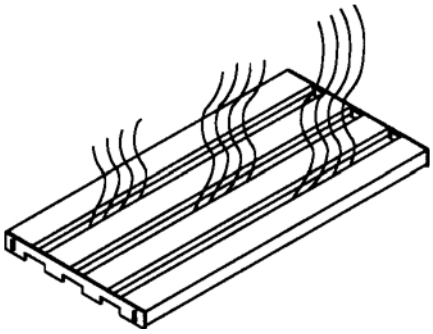
Line Power Vent-A-Lid *(Patent No. 746.340)*

Another new and innovative product from Line Power Manufacturing — the leader in mine power distribution.



Vent-A-Lid

With the ever-increasing KVA requirements for underground Power Centers, and in particular, Longwall Power Centers, many undesirable features were presenting themselves. For example:

1. "Skin" temperature, especially the top cover lid over transformer bays can reach 140°C, a definite hazard to workers.

2. Excessive heat within the Power Center enclosure can adversely affect electrical components.

3. Excessive heat within the Power Center enclosure reduces the efficiency and life expectancy of the transformer.

4. The use of thermocouples and relays to reduce the incidence of the above conditions can result in unscheduled shutdowns.

These undesirable features can be essentially resolved with Line Power's new Vent-A-Lid incorporated into the design of your Power Center.

There is no trade-off, as the Vent-A-Lid is structurally more robust than a flat sheet top cover, sheds debris and water as well as a flat sheet top cover and uses no forced air ventilation to meet a KVA requirement.

The Vent-A-Lid's tortuous air path design also meets the requirement of retarding flame emissions from the enclosure in case of an internal fire.

Line Power Manufacturing has noted the concern the mining industry has expressed with the inherent problems associated with large KVA units in underground mines. With the new Vent-A-Lid design, we feel that this concern has been successfully and safely addressed.

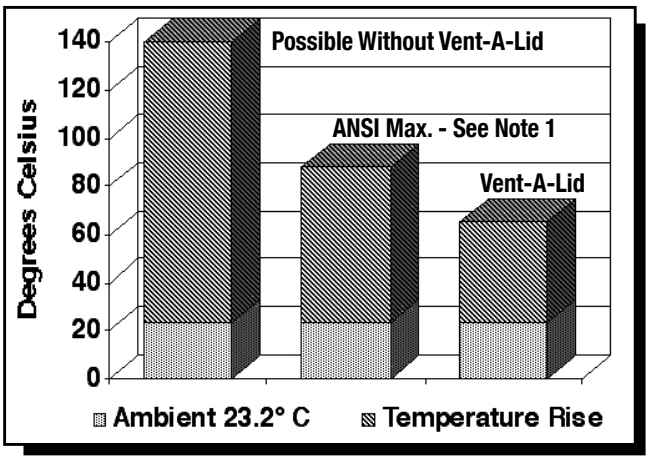
Test Summary

A heat run test was performed in accordance to ANSI/IEEE C57.12.91, Section 11, on a 4500 KVA Longwall Power Center with all covers, top and side, in place and fastened. The top covers over the transformers were of the Vent-A-Lid design. Ambient temperature was 23.2°C. The highest surface temperature recorded (during a short-circuit test) was on a Vent-A-Lid cover over a transformer. This cover was within 2" of the core steel of the transformer. This temperature was 66°C, a rise of 42.8°C.

Note 1: ANSI/Ieee C57.12.01, Section 5.11.3.5 Temperatures of external parts accessible to operations shall not exceed the following temperature rises over ambient temperature at maximum rated load: Readily Accessible: 65°C Rise; Not Readily Accessible: 80°C Rise.

Note 2: "Not Readily Accessible" is considered to apply to equipment parts located at heights greater than 6.5 feet (1.96 m) above floor level, or otherwise located to make accidental contact unlikely.

Heat Run Test



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