



TURBINE TIPS

Turbine Tips provided by Pond and Lucier, LLC. ®

634 Plank Road, Suite 103 Clifton Park, NY 12065

Phone: 518.371.1971 Fax: 518.371.1756 E-mail: pal@pondlucier.com



November 2004

Subject: Ward-Leonard Replacement Relays

Applies to: GE gas turbine models MS5001K, L & LA and MS3002F

GE Gas turbines manufactured in the late 1960s typically came with *Ward-Leonard* relays. There were four types of DC relays used: 2-pole and 4-pole for both 125 volt and 62.5 volt applications. On most gas turbines, the panel had over one hundred *W-L* relays. See Fig. 1 below, where the rear wall (lower part of photo) shows various *W-L* relays.



Fig. 1: GE control panel with Ward-Leonard relays on rear wall

The *W-L* relays were open to the atmosphere and subject to corrosion and dirt. Also, arcing problems often result in carbon discharge on the relay contacts. Now there are reliable relay replacements that fit in the same “footprint” and wiring configurations as the original *W-L* relays. The *PAL* relays are mounted in the same location with the same wiring as shown in Fig 2 below.

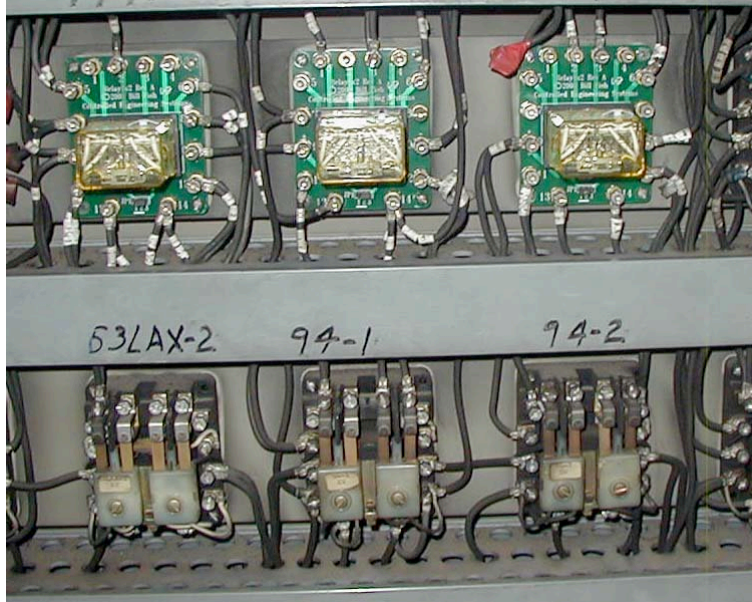


Fig. 2: PAL relays replace Ward-Leonard relays in the same footprint and wiring pattern

The W-L relays in Fig. 2 above distinctly show carbon build up on the relay arms and contacts. The original wiring is shown with wire numbers with the new *PAL* relays.



Fig. 2: Ward-Leonard relays shown with PAL relays in test kit

The *PAL* relay replacements have two components: the plug in relays and the mounting blocks. Both the relay and the block have **LED** lights. When power is available to the block (indicating that the relay **should** be energized), the light on the block will be lighted. If the relay is functioning properly, it will “pick up” and its light will also turn on. Thus, the lights should always match. In the test rig shown in Fig. 3 below, the advantage 2-light setup is obvious. See the lower half of the photo as the engineer energizes the relay by pressing the test pushbutton. Both lights turn on.



Fig. 2: 4-pole PAL relay being tested showing contact closures with red LED

The test rig above also shows four red lights lighted for the relay being tested below. This type of relay has four normally-closed (NC) and four normally-open (NO) contacts. The red lights indicate that all the NO contacts have **closed** with the energization of the relay. Test rigs for the relays are also available from ***Pond and Lucier, LLC***.

For more information and pricing for the ***PAL*** relay replacements and blocks for the old ***Ward-Leonard*** relays, open the tab called **products** on the home page menu of this website. Or please call Dave Lucier of ***Pond and Lucier, LLC*** on 518-330-4801.