



TURBINE TIPS

Turbine Tips provided by Pond and Lucier, LLC. ®

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Subject: Flex Hosing for Flow Dividers

Applies to: General Electric gas turbines burning liquid fuel

GE gas turbines that burn liquid fuel typically utilize flow dividers manufactured by *Roper*. These flow dividers originally were installed at the GE factory using rigid piping on the supply side and stainless steel tubing on the discharge lines going to the combustion system (10 lines). Also, there are ten smaller rigid tubing lines connected to a selector valve for pressure sensing to the fuel nozzles.

For turbines that require changing flow dividers frequently, rigid tubing and piping connections can present problems. Flow dividers must be installed in a “strain free” condition. They must be set level and never twisted, or the flow divider will not turn properly. If the supply pipe or discharge tubing lines *strain* the flow divider casing in any way, it will not turn or it will stop during turbine operation. A “failure-to-fire” or “loss of flame” may result due to immobility of the flow divider. See Fig. 1 below. The original flow divider has been replaced. Notice that the original tubing has been re-used. With all these tubing connections, a *strain-free* condition is difficult to achieve.

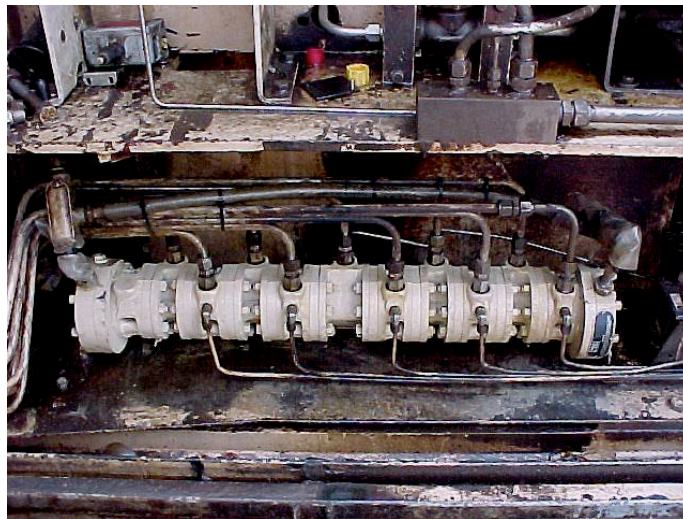


Fig. 1: Flow divider with rigid tubing connections

The flow divider in Fig. 2 below was installed plumb and shimmed level. It was squarely positioned with respect to the rigid supply-side pipe connected underneath the center. Once assured that the flow divider turned freely (access to turn it is from the end with a screw driver), the flexible hoses were connected on the discharge side. If realignment was required to assure that the flow divider turned freely, it could be easily done due to the flexible hoses.



Fig. 2: Flow divider tubing using high-pressure braided hosing

The braided-steel flexible hosing (rated at 1000 psig) can be cut to length and the fittings (red color in Fig. 2 above) installed in approximately one work day by a trained pipe and tubing fitter. A special cutting saw with a carbon wheel is required to cut the hoses neatly and to the proper length. High-pressure, aircraft-quality AN fittings must be used. Pipe fitting adapters on each end must be used to connect into the flow divider. **Caution:** Do not over-tighten the fittings.

For further information about the installation of a high-pressure hoses on flow dividers, contact Dave Lucier of **Pond and Lucier, LLC** by calling: 518-330-4801.