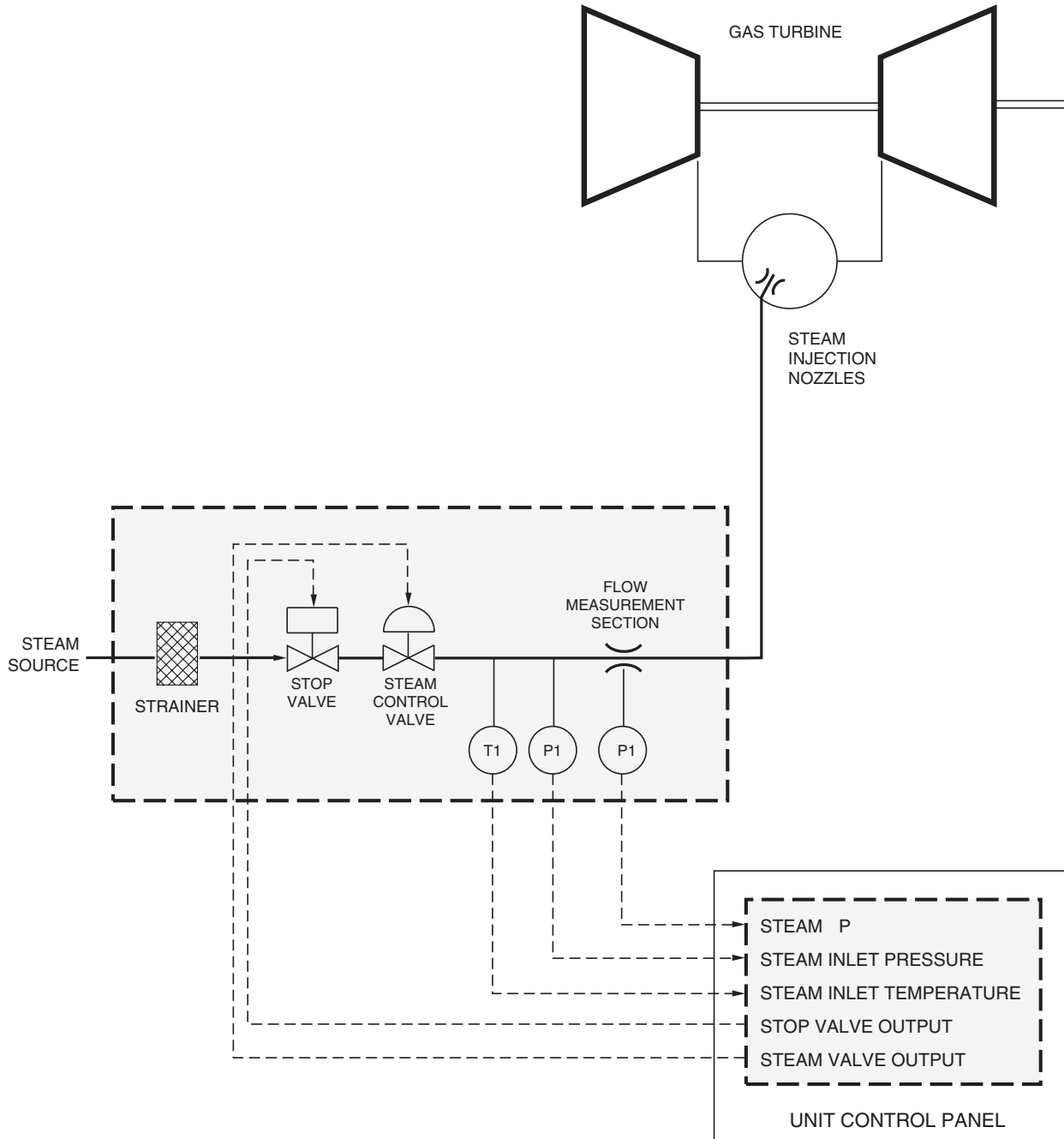


GAS TURBINE STEAM INJECTION SYSTEM FOR POWER AUGMENTATION



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Simplified schematic showing principal parts of the Petrotech steam injection system for power augmentation for a gas turbine application.



APPLICATION

Injection of steam into the combustor of a heavy-duty gas turbine lowers peak combustion temperature for a given power output. This effect can be utilized exclusively to increase peak power at the same peak combustion temperature.

ADVANTAGES

Functional control improvements:

- Faster, more accurate steam injection control extends hot gas path parts life. Power increases of up to 10% are possible on some units. The cost per kW is very low.

Maintenance:

- "Off-the-shelf" commonly used valves and other components reduce spare parts and maintenance costs.
- Items available off the shelf have original manufacturer's part numbers, rather than Petrotech part numbers.

No hydraulics possibility:

- If Petrotech's electro-mechanical servo actuated (EMSA) gas fuel valve is used, all hydraulic and pneumatic requirements are eliminated. However, the system will function with most hydraulic fuel control valves.

Simple Installation:

- The steam injection system hardware assembly is typically delivered as a packaged, tested skid for mounting on or adjacent to the turbine skid base. The steam flow measurement section is installed in the steam piping, on or off base. The control logic installs either in an existing PLC-based unit control panel such as Petrotech's Series 9500 control panel, or can be a separate control unit.

STEAM INJECTION SYSTEM FOR POWER AUGMENTATION SCOPE OF SUPPLY

The Steam Injection for Power Augmentation System includes the following:

- High-recovery venturi type flow measurement section.
- Hydraulic or electric (specify) actuated steam control valve.
- Low pressure hydraulic actuated steam stop valve.
- Two (2) dP flow transmitters, Rosemount.
- One (1) temperature transmitter, Rosemount.
- One (1) pressure transmitter, Rosemount.
- Miscellaneous hand valves, strainers, filters, and gages.
- Steam Injection for Power Augmentation Application Control Package software for specified microprocessor hardware. This software integrates seamlessly into Petrotech Series 9500 gas turbine unit control panels, and is usually adaptable to other PLC-based control systems.
- PLC, if required.
- Project-specific engineering, installation assistance, start-up and commissioning, documentation, and training.

Certain items typically furnished by the customer, but can be furnished by Petrotech:

- Gas and liquid manifolds, fuel nozzles, pigtails, check valves, miscellaneous installation piping and labor.

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