



**DELTA "T" SYSTEMS, INC.**

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## **PT4 Automatic Ventilation Control System**



The P/T4™ Ventilation Control System is designed as a complete engine room ventilation system for use in vessels with an engine space that is well sealed from the interior accommodation spaces and where quiet automatic operation, maximum efficiency and engine room or remote control is preferred.

### **System Description**

Engine room cooling to be provided by a push / pull air flow system with both dedicated intake fan(s) and dedicated exhaust fan(s) to remove convection and radiation heat from the engine room space and maintain a temperature (DT) at or below the maximum limit specified by the engine manufacturer when underway. Main engine combustion air to be supplied by the intake fan(s) via pressure control to maintain neutral or slightly negative pressure within the engine room, regardless of engine RPM. Cooling/Combustion Air Fan(s), Adjustable Speed Drive(s) & Inlet Opening(s) Cooling and combustion air for operating machinery to be introduced into the engine room space by dedicated intake fan(s). Fan(s) sizing, flow and performance is critical for proper control system function and proper selection is a must. In addition the Adjustable Speed Drives (ASD) for each intake fan that allow the P/T4™ Ventilation Control System to adjust the fan flow must be selected based upon the fan motor voltage, size and horsepower. Moisture Eliminators may be fitted to the intake air openings to remove spray, rain and salt mist. Velocity and flow through the eliminator profile is critical to proper moisture separation and pressure drop. Please consult Delta "T" Systems regarding recommended fan size(s), opening size, ventilation shaft size and application engineering.

### **Exhaust Air Fan(s), Adjustable Speed Drive(s) & Inlet Opening(s)**

Radiation and convection heat from operating machinery to be extracted from the engine room space by dedicated exhaust fan(s). Fan(s) sizing, flow and performance is critical for proper control system function and proper selection is a must. In addition the Adjustable Speed Drives (ASD) for each exhaust fan that allow the P/T4™ Ventilation Control System to adjust the fan flow must be selected based upon the fan motor voltage, size and horsepower. Moisture Eliminators are recommended to be fitted to the exhaust air openings to remove spray, rain and salt mist (all fans are reversible and exhaust fan[s] may be used as an intake via the P/T4™ Ventilation Control System). Velocity and flow through the eliminator profile is critical to proper moisture separation and pressure drop. Please consult Delta "T" Systems regarding recommended fan size(s), opening size, ventilation shaft size and

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## **P/T4™ Ventilation Control System Automatic Operation**

Fan operation to be digitally controlled via proprietary P/T4™ Ventilation Control System using the FCI-T2™ touch screen control interface located in the engine room or control room. When the main engines are started, the control system will automatically switch to the “AUTO RUN™” mode and start the fans, adjusting fan speed and air flow to maintain the correct volume and flow of cooling and combustion air to the engine room space. As engines speed up and air requirements increase, the intake fan(s) will automatically respond to the additional airflow demands and increase the incoming air volume. No interface to the engine throttles is required. The exhaust fan(s) speed is automatically controlled based upon the temperature of the engine room space, maintaining the operating temperature at or below the engine manufacturers maximum (DT) when underway. By automatically speed controlling the fans, the electrical loads and noise levels are kept to a minimum level based upon the prevailing operating conditions.

Upon main engine shut down, the P/T4™ Ventilation Control System will automatically switch the fan operation to the “QUIET RUN™” mode to remove excess heat and cool the engine room. The operator can set the fan speed limit the when operating in the “QUIET RUN™” mode so fan sound characteristics never exceed the desired level. When the engine room reaches the user programmable engine room temperature value, all fans will shut down. As the engine room temperature rises, the fans will continue to start and stop automatically, thus providing true thermostatic control of the engine room when dockside or when operating generators. When main engines are restarted, the system will then automatically switch to the “AUTO RUN™” mode.

**Manual Operation** - In the event that engine room ventilation is required, such as when performing engine room maintenance or removing fumes, the fans can be turned on and manually controlled in both forward and reverse directions from the FCI-T2™ ventilation control system interface.

-Engine room ventilation is truly “Set and Forget” when using the P/T4™ Control System. System Safety Functions The P/T4™ Ventilation Control System will automatically shut down all fans upon discharge of the fire system. A simple pressure actuated switch provided by the fire system manufacturer provides the signal to the system for automatic shutdown.

## **System Options**

-Alarm System Interface provides a means to interface the P/T4™ Ventilation Control System to an existing vessel alarm system. Normally open and normally closed contacts are provided. One interface is required for each touch screen display.

-FCI-T2™ Remote a remote touch screen control interface can be provided for an additional location such as the pilothouse or where fan remote control is required outside the machinery spaces. Includes display, interface cable, and adapter card.

-Fire/Smoke Dampers all fans and/or inlet openings may be fitted with flange-mounted aluminum and stainless steel fire/smoke dampers. In the event of a fire and subsequent discharge of the fire system, an ABS and U.S.C.G. approved actuator will close the damper automatically. This assists the fire system in maintaining the proper concentration of extinguishing agent by preventing dilution via the ventilation air openings. Actuation can be by CO2 & Halon fire systems and requires no electrical components. The dampers must have an access provided at the plenum to facilitate periodic testing and resetting. Electric Damper Actuators in both AC and DC voltages are available as a special order item.

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