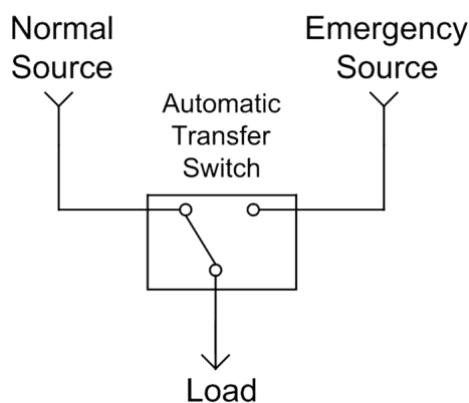


EMCP 4 Automatic Transfer Switch Functions

All standby power systems require a means to transfer from the utility source to the emergency generator source if an outage occurs. In most applications, an Automatic Transfer Switch (ATS) is utilized to identify the failure of the primary source, request the start of the emergency source, and facilitate the transfer between sources.

While the ATS provides a critical function in an Electric Power System, the ATS drives additional cost, a potential single point of failure in a system, and can be considered a point of reduced reliability in a systems design.

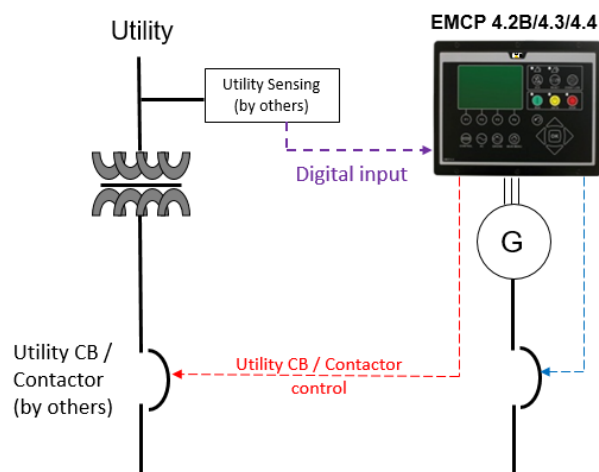
The traditional ATS is comprised of a transfer element and a controls element. The transfer element can be a combination of breakers or a contactor based device enabling the transfer between the two sources. Meanwhile, the control element provides the verification of available power sources, a run signal to the emergency backup system, and logic to transfer between the sources.



The Cat EMCP 4 implements the Auto Mains Failure controls logic from the traditional ATS directly in the generator set controller. This enhancement enables the EMCP to autonomously change the power source to the load between the utility and the generator via an open transition method. The EMCP 4 monitors the condition of the utility via a digital input to be provided by the customer (Loss of Utility) and will automatically start the generator and transfer the system to generator power upon identification of a utility failure.

The identification of the utility failure requires the customer to monitor the incoming utility and determine when then source does not meet the desired conditions. This can be accomplished in the simplest method using a relay to monitor the voltage at the mains side of the utility disconnect. If this method is chosen, the minimum recommendation is to utilize a three-phase relay such that a loss of a single phase can be identified. The customer can also choose to utilize a more complicated process with a multifunction relay to monitor various power conditions.

The EMCP can react automatically to the input provided from a monitoring method as described above or manually from a signal initiated by the user remotely, locally through the EMCP display, or through a SCADA command.



By incorporating this logic into the generator controller, the customer can utilize the Mains Disconnect and the Generator Disconnect to service as the point of transfer for the system. This reduces the components within the overall system design to provide a reduced cost option for customers.

The EMCP 4 controls the utility breaker (EMCP 4.4 only) or contactor (all versions of controls) via a utility contactor close command signal (energized to close, de-energized to trip) or utility breaker close and trip commands. The EMCP 4 can then control the generator breaker (EMCP 4.4 only) or contactor. These functions are operational only when the transfer switch feature is enabled AND the transfer switch logic is what is requesting contactors or breakers to open or close.

Complex operations can be developed to provide activation of multiple ATS or even sequence ATS loads, however these

functions require additional programming and considerations beyond the standard controls configurations.

While the ATS functionality in the EMCP can provide many of the serviceable functions of an ATS, it is not a UL1008 certified device. The UL1008 requirements place more strict requirements on the withstand and close capabilities of the device which are not within the scope of the controls of the EMCP. If this feature is required, refer to the Cat ATS products for available offerings.

The Open Transition ATS functions can be utilized on single generator applications with the use of the EMCP 4.2b or 4.3, or in paralleled applications with the EMCP 4.4. For more details on the capabilities of the EMCP 4 refer to the A&I Guides LEBE0049 for EMCP 4.2B and LEBE0007 for EMCP 4.3/4.4.