

SIEMENS PLC — INCORRECT ALTERNATION

Each Vmax system is tested and checked at the factory prior to shipment to ensure trouble-free operation. In the unlikely event you encounter a problem, we recommend that you consult with your local distributor for parts/service. Remember, when calling for service, parts or system information, always have the pump or system model number and serial number ready.

[Click here to find your local authorized distributor.](#)

DEKKER uses the Siemens LOGO! programmable logic controller to perform several functions such as turning pumps on and off based on feedback from a vacuum transducer, alternating the lead/lag pumps in a multiplex vacuum system, or providing minimum run time to protect pump motors from frequent starts (10-minute minimum run time is typical).

Under normal programming, the PLC logic will have the vacuum pumps alternate every 24 hours at a set time. For instance, in a duplex system, if the alternation time is set at 11:00 p.m., the first time there is a demand for vacuum after 11:00 p.m., the pumps will alternate. Let's look at an example.

On Monday, pump #1 is the lead pump and pump #2 is the lag pump. At 11:00 p.m., the alternation signal trips in the PLC logic. At 11:05 p.m. the vacuum level drops to the "ON" setpoint in the PLC logic, calling for a vacuum pump to turn on. Since this is the first demand for vacuum after the 11:00 p.m. alternation time, the pumps will alternate, causing pump #2 to be the lead pump and pump #1 to be the lag pump.

For the second example, on Tuesday pump #2 is the lead pump and pump #1 is the lag pump (remember, the pumps alternated at 11:00 p.m. on Monday night). At 10:55 p.m. the vacuum level drops to the "on" setpoint in the PLC logic, calling for a vacuum pump to turn on. Since it is before 11:00 p.m., pump #2 is still the lead pump, so pump #2 will turn on. Because the PLC logic has a built-in 10-minute minimum run timer, pump #2 will continue to run until 11:05 p.m. then shut off. The next time the vacuum level drops to the "ON" setpoint in the PLC logic, the pumps will alternate, calling for pump #1 to become the lead pump again.

In the event the Siemens LOGO! PLC does not allow alternation of the vacuum pumps on a multiplex vacuum system, make sure the clock is set on the PLC. If the clock is not set, the PLC logic says "alternate at 11:00 p.m." but the PLC does not know what time it is so the alternation signal is never sent so the pumps will not alternate. [See Siemens PLC — Setting the Clock](#)

Another issue that can cause the pumps to not alternate is if the parameter settings for turning the lead pump on and off are set incorrectly causing the lead pump to not shut off. In example 2 above, the alternation time was set to 11:00 p.m. so the pumps will alternate the first time the PLC calls for a pump to turn on AFTER 11:00 p.m. The pumps never alternate because the lead pump never shuts off as it has not achieved the "OFF" setpoint. The solution is to make sure the on/off parameters are set correctly. [See Siemens PLC — Setting PLC Parameters](#)

In the unlikely event the Siemens LOGO! PLC requires an update to the program (not just the parameters), a new program can be installed through the use of an EEPROM chip. Programs are kept on file at DEKKER Vacuum Technologies. Copies of the original program supplied in the PLC can be purchased through DEKKER Vacuum.

WARNING! Before attempting any repairs, disconnect all power from the system by switching off power at the main breaker or disconnect switch. Always use appropriate Lock Out - Tag Out procedures.

