



PERRY EQUIPMENT CORPORATION

AN ISO 9001 COMPANY

PEACH®
GEMINI PURA-SEP®

Horizontal Type
Series PGCPH

PRINCIPAL OF OPERATION

The PEACH® Gemini Pura-Sep® is two-stage filter-coalescer used for removing solids and liquids from a natural gas stream. The uniqueness of this design is that one replaceable element acts as both the primary and secondary stage, with an element support plate separating the two stages. This provides dual stage coalescing. This portion of the element is inside a Louvered Impingement Baffle (LIB). This LIB is a stainless steel louvered cylinder placed in the second stage of the vessel. However, if it becomes plugged, it is easily removed from the primary stage of the vessel. It can then be cleaned and/or replaced.



The access to the elements is through a full end opening PECO Quick Opening Closure, located at the inlet end of the vessel.

These horizontal vessels are of a double horizontal barrel design, each with two compartments. The upper barrel provides the filtration-coalescer-separation of the solids and liquids, while the lower barrel collects the liquid. Some of the solids will drain into the lower barrel below the first stage, but most of the solids collect on the elements and on the bottom of the first stage upper barrel.

The wet, dirty gas to be cleaned enters the vessel through the inlet nozzle and encounters the pipe risers. Here the free liquids fall to the bottom and flow into the first stage sump. Large droplets strike the pipe risers by inertial impaction and then coalesce on the pipe risers and make their way to the bottom of the first stage and into the sump for removal. This removes droplets greater than 100 micron in size.

The gas with solid particulate and liquid droplets then must travel from the outside of the element to the core in order to move into the second stage of the vessel. Here most particulate is removed and the liquid droplets greater than 0.5 to 1.0 micron are removed by direct interception and coalescing.

The gas then travels into the second stage in the core of the element. The liquid is drained through the element. The remaining aerosols see another stage of coalescing as the gas travels from the inside of the element to the outside. This coalesces droplets as small as 0.3 micron.

From here the secret to the operation of the vessel is to keep this liquid from re-entraining in the gas and to allow the clean gas to flow out the outlet nozzle. There are several devices in the second stage that make this possible. The first device is the louvered impingement baffle or LIB. This stainless steel baffle allows the gas to flow from the gas element while the liquid droplets settle to the bottom of the second stage into the second stage sump. It is critical to achieving the performance required while in a horizontal configuration. The large droplets of coalesced liquid impact the LIB while the gas is released and travels out the back end of the vessel.

A stilling screen installed in the bottom of the second stage prevents the gas from re-entraining the liquid that collects in the bottom of the second stage as it flows into the sump. Finally, the outlet nozzle, which is placed in the top of the second stage, projects into the vessel. This prevents liquid, which may creep along the vessel wall, from going out the outlet pipe.

ENGINEERED FILTRATION TECHNOLOGIES

INSTALLATION & OPERATING INSTRUCTIONS

INSTALLATION OF THE VESSEL

1. Please follow all COMPANY/CONTRACTOR PROCEDURES and SAFETY RULES while installing the vessel.
2. Review the vessel drawings and locate all of the connection's elevations and orientations.
3. For horizontal vessels, the liquid level control equipment will be installed on both the primary and secondary sections of the lower barrel.
4. A direct reading differential pressure gauge should be installed across the element support plate. This is necessary to know when to change out the elements. The inlet section (primary stage) is the high pressure side, and the outlet section (secondary stage) is the low pressure side. Pressure drop is the only immediate indication that the element requires changing.
5. Connect the upstream piping to the vessel inlet and the downstream piping to the outlet.
6. Connect all of the piping in the inlet and outlet sections independently. Do not interconnect the drain piping without using a check valve. Do not manifold the control equipment between the first and second stage as this will cause a bypass of the internals.
7. Once the piping is completed, the vessel is ready to be checked out for any leaks.
8. Following the COMPANY procedures, slowly purge the vessel of all air, then check for leaks.
9. The vessel is ready to be pressurized and placed on stream.

OPERATING INSTRUCTIONS

1. The elements must become completely saturated before they will begin stripping liquids. This may take 24 hours or longer, depending on the amount of free liquid in the gas stream.
2. Under no circumstances the vessel to be back-flowed. Back-flowing will damage the internals.
3. If a unit has been flowing at a capacity far lower than the design capacity, it is recommended to take the vessel offline and clean it before increasing to maximum capacity.
4. Do not clean the unit with steam injected directly onto the elements.
5. If the solids removed from the gas cause combustion with air, it is recommended to flood the vessel offline and clean it before increasing to maximum capacity.
6. If the unit has been operating for any length of time, it is recommended to open the drain in the primary and secondary stage to remove any condensate that may have collected there.

CHANGING THE ELEMENTS

1. Blow down the vessel and prepare the vessel to be opened following the COMPANY procedures. Once the operator is assured that the pressure in the vessel is 0 psig, then go to step 2.
2. Open the closure following the Manufacturer's instructions. It is critical that the procedures for the closure be followed, in order to assure safe and efficient operation. For a PECO closure, the instructions are found in the PECO Quick Opening Closure Operating Instructions, PECO Quick Opening Closure Operating Instructions (6" to 8") or PECO Safelock Operating Instructions.
3. Remove the inlet support grid. This is done by removing the clevis pins, which attach the inlet support grid to the vessel wall. In larger vessels, the inlet support grid may be more than one piece to make removal easier. In these vessels the pieces of the support grid are held together using bolts and fixed nuts. Therefore, bolts should be removed after the clevis pins are removed. The inlet support grid is then removed from the vessel.
4. Remove the elements by pulling the element straight outward. You will note that the inlet end cap of the element is colored and the outlet end cap is white.
5. Clean the interior of the vessel, as required, by removing solids and liquids that have collected.
6. Install the clean elements, being sure that the chevron seal located on the element seal ring which is placed near the center of the element is properly placed. The larger OD of the chevron seal should be on the inlet side of the element.
 - A. As noted above the second stage end of the element has a white end cap. This end cap is inserted first through the riser pipe and into the second stage.
 - B. The chevron seal must seat inside the riser pipe to obtain a seal on the element and not allow a bypass around the element. The bayonets on the end caps are also of a different size to help assure that the element is placed properly.
7. After all of the elements are installed, replace the inlet support grid. This is done by placing it in the vessel in such a manner that the bayonets on the inlet end caps (these are the colored ones) go through the appropriate hole in the support grid.
8. The grid is then secured to the vessel by replacing the clevis pins once the support clips attached to the vessel have been brought through the appropriate hole in the inlet support grid. In larger vessels the bolts connecting the sections must also be replaced and tightened.
9. Once everything is completed, the elements change out is complete and the closure may be closed. Remember all of the end caps that are seen through the inlet support grid should be the same length and should be colored.
10. Again the closure manufacturer's operating instructions must be followed in cleaning, inspecting, and closing the closure.
11. Care must be taken during the re-pressuring of the vessel so that gas does not flow through the vessel from outlet to inlet, thus resulting in a back flow condition. This can damage the internals of the vessel.

IF ANY DIFFICULTIES ARE EXPERIENCED WITH THE UNIT, PLEASE CONTACT PECO OR YOUR REPRESENTATIVE