



Toase-eh Park Sanati Gohar Ofogh  
 Petrochemical Co.  
**CONCEPTUAL, BASIC and DETAIL DESIGN ENGINEERING OF  
 STYRENE PARK OFFSITE**



Document Title: Process Description for Active Carbon Filter & Basket Filter

Document No.: EI027-ENR-VD-PR-DCR-004

Rev. R1

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# STYRENE PARK OFFSITE

**Document Title:**  
**Process Description for**  
**Active Carbon Filter & Basket Filter**

Rev.	Issued Date	DESCRIPTION	PREPARED	CHECKED	APPROVED
R1	21-Apr-2024	Issue For Information	M. Hosseini	E. Malek	H. Keshmiri
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**REVISION RECORD SHEET**

Page	Revisions							Page	Revisions						
	R0	R1	R2	R3	R4	R5	R6		R0	R1	R2	R3	R4	R5	R6
1	x	x						41							
2	x	x						42							
3	x	x						43							
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## 1. Introduction

Creation and development of chain units of Styrene Monomer is the mission of Gohar Ofogh Industrial Park. This Company joint investment of four companies including JPC, Asaluyeh Sadaf Chemical, Kimia Sanaye Dalahoo and Entekhab Group and is located in Assaluyeh.

Feed and utility lines and network construction, a Styrene Monomer tank construction, Peroxide and its sidelong equipment warehouse are among this company's missions.

Some of the ongoing Projects of this company are:

- ABS-Rubber project
- ESBR project
- EPS project
- Poly Styrene

Utility services of Park Styrene, including DM water, HP steam, service water, potable water, cooling water make up, nitrogen, instrument air, plant air and fuel gas are provided by Damavand Petrochemical and delivered at the south battery limit of park styrene. COC, POC, SN, Condensate return and cooling blow down are returned from park styrene and return to Damavand Petrochemical.

## 2. Definitions

**Project:** Toase-ehe Park Sanati Gohar Ofogh Petrochemical Co.

CONCEPTUAL, BASIC and DETAIL DESIGN ENGINEERING OF STYRENE PARK OFFSITE

**Owner:** Gohar Ofogh Industrial Park

**Contractor:** Podgem Polymer Development Company

**Location:** Assaluyeh zone, Boushehr province, IRAN

## 3. Site Environmental Conditions & Utilities

This package was installed outdoors. Outdoor conditions are according to the below table:





Outdoor Conditions	
Max. Ambient Design Temperature	85°C
Expected Extreme Temperature	52°C
Min. Ambient Temperature	5°C
Max. Relative Humidity	80%
Min. Relative Humidity	65%

## 4. Design Data

Each row of filters flowrate is according to the below:

- Operating flowrate: 1080 Nm<sup>3</sup>/h
- Design flowrate: 1188 Nm<sup>3</sup>/h

For more process and mechanical information about equipment's refer to reference documents.

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## 5. Process Description

Polluted air vented from the styrene storage tanks TK-0001A/B, is diluted with air and sucked by the blower B-0001A~D. The effluent will be routed to activated carbon filters (PK-0002-A & PK-0002-B) (one filter for each storage tank) for minimization of styrene emission. The Active Carbon Filter Package is designed to eliminate VOC impurities (mostly styrene).

In air pollution control, activated carbon is the most widely used adsorbent. Activated carbon is the most suitable adsorbent for the removal of organic vapor.

Activated carbon is a microporous inert carbon matrix with a very large internal surface (700 to 1500 m<sup>2</sup>/g). The internal surface is ideal for adsorption.

The gas stream is passed through the activated carbon, where the to be-removed components bond with the activated carbon via adsorption, until it is saturated. Once the activated carbon's saturation level has been reached, it is replaced.

When contaminated gas flow into the basket filter (PK-0001-A & PK-0001-B), it enters the filter housing through an inlet port and then passes through the filter element.

A basket type filter will be considered in downstream of active carbon filters to eliminate solid particles larger than 5 microns from the gas stream before venting to atmosphere. The basket filter is capable of retaining 95% of particles larger than 5 microns.

A basket filter is a type of filter used to remove impurities and particles from liquids or gases. It consists of a cylindrical or pleated filter element housed in a casing of various materials, such as paper, polyester, or cotton.

The gas flow through the pores of the filter element. The filter traps the solid particles larger than the component's pore size on the surface.

A specific micron rating is vital while designing the cartridge. It determines the size of particles that the filter can capture.

PDIT is installed on the inlet and outlet lines of each filter for measuring pressure drop. When the pressure drop increases, PDIT will send a high signal to the client control system (DCS). The required action will be taken by operation staff. For more detail, please refer to Installation, Operating and Maintenance Manual for Active Carbon Filter document (EI027-ENR-VD-PR-PRO-001).

## 6. Reference Document

- Piping & Instrumentation Diagram (P&ID) for Active Carbon Filter	EI027-ENR-VD-PR-PID-003
- Process Flow Diagram (PFD) for Active Carbon Filter	EI027-ENR-VD-PR-PFD-002
- Installation, Operating and Maintenance Manual for Active Carbon Filter	EI027-ENR-VD-PR-PRO-001
- Equipment Data Sheet-Active Carbon Filter	EI027-ENR-VD-ME-DSH-001
- Piping & Instrumentation Diagram (P&ID) for Basket Filter	EI027-ENR-VD-PR-PID-003
- Process Flow Diagram (PFD) for Basket Filter	EI027-ENR-VD-PR-PFD-002
- Installation, Operating and Maintenance Manual for Basket Filter	EI027-ENR-VD-PR-PRO-001
- Equipment Data Sheet-Basket Filter	EI027-ENR-VD-ME-DSH-002