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Recovery the Regeneration Gas from Liquefied Petroleum Gas Dryer to Off Gas Compressors

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Abstract : The liquified LPG (Liquefied Petroleum Gas) drying system at the Complex is designed to remove water and mercaptans from the LPG stream. Upon saturation of the desiccant beds, a regeneration cycle becomes necessary. The original design routed the regeneration gas, produced during the LPG dryer heating cycle, to the sulfur recovery unit to the incineration. However, concerns regarding high temperatures and potential unit disruptions led to a modification where the gas is currently vented to the acid flare for the initial hour before being diverted to the LP network fuel gas system. While this addresses the temperature concerns, it generates significant smoke due to the presence of liquid hydrocarbons. This paper proposes an approach to recover the regeneration gas and redirect it back to the gas plant's (off-gas compressors) instead of sending it to the AC (Acid Flare), by utilizing the existing pipe 6” and connected to off gas compressor KO (Knock-Out) Drums . This option is simple to operate, flexible, environment-friendly solution as long-term solution, lower in capital expenditure and increase the company's profitability. The feasibility of this proposal is supported by dynamic simulations. The simulations suggest the possibility of operating two out of the three off-gas compressors and LPG (Liquefied petroleum gas) as a liquid phase, is foreseen to be carried over and gathered at the bottom level of the KO (Knock-Out) Drum.

Keywords : thermal incinerator, off-gas compressors, environment, knock-out drums, acid flare
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