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土库曼斯坦阿姆河第二天然气处理厂集气工艺优化

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摘要:

土库曼斯坦阿姆河第一天然气处理厂集气装置在实际运行过程中存在气液分离器分离乳化油效果不明显、段塞流捕集器容量偏小、上游来液含较多乳化油严重影响下游凝析油稳定装置的平稳运行等问题, 为避免类似问题的发生, 有必要对即将投产的阿姆河第二天然气处理厂集气装置的工艺进行优化。从优化段塞流捕集器形式、增加分离缓冲设备和优化布局等因素综合考虑, 采取了以下5项优化措施: ①分别设置高低含硫天然气集气系统以满足下游酸气处理工艺要求; ②采用新型高效段塞流捕集器提高气液分离效率; ③增设缓冲沉降罐减小乳化油对下游装置的影响; ④优化了设备平面布置增加操作舒适性; ⑤完善安全放空系统, 保证系统本质安全。优化后的集气装置能实现原料气气液高效分离、计量, 对高低含硫系统硫化氢含量进行监测并对气量实现实时调配, 确保了系统平稳高效可靠运行。

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Optimization of gas gathering process in the No.2 Amu Darya River (Turkmenistan) Gas Processing Plant

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Abstract:

During the actual operation of the No.1 Amu Darya River (Turkmenistan) Gas Processing Plant, problems were summarized as follows: a poor performance of the gas liquid separator in emulsified oil separation, a small capacity of the slug catcher, and a seriously bad effect of the liquid from upstream containing much emulsible oil on the smooth operation of the downstream condensate stabilizer. In order to prevent the above similar problems, it is quite necessary to optimize the process of the No. 2 Amu Darya River (Turkmenistan) Gas Processing Plant. From such aspects as the selection of slug catcher types, the supplement of the separating buffer device, and the optimization of the plane layout, etc., we adopted the following measures: (1) Build a high and a low sulfur gas gathering system respectively to meet the requirements of downstream acid gas treatment process; (2) Use a new efficient slug catcher to improve the efficiency of gas liquid separation; (3) Add a buffer and settling tank to reduce the impact of emulsible oil on downstream devices; (4) Optimize the device layout to benefit from more comfortable operation; (5) Improve the safe venting system to ensure the intrinsic safety of the whole plant. With this optimized gas gathering unit, good results can be achieved by the efficient separation of raw gas liquid, liquid measurement, monitoring the contents of hydrogen sulfide in the high and low sulfur systems and real time distribution of gas flow to ensure the smooth, efficient and reliable operation of the whole unit.

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