Case Study: Special PRDS in 114 MW Power Plant

Customer

A reputed Ferro-Alloys manufacturer having establishments in India, South East Asia & Africa

Problem Statement

Our Customer needed a Pressure Reducing & Desuperheating System (PRDS) that would reduce high pressure superheated steam to low pressure saturated steam for Autoclave application. This was a special requirement due to the huge variation in the steam flow rate – minimum 200 kg/hr to maximum 6000 kg/hr. Consequently, this also meant a huge variation in the corresponding spray water flow rate – 38 kg/hr to 1205 kg/hr. Also, these variations would be occurring periodically, since each Autoclave would undergo sealing, charging & curing cycles every 8 hours.

For this application, other vendors had suggested to the customer that these parameters could be achieved only through 2 separate PRDS systems.

Process Requirement / Challenges

The key challenges in this project were as follows:

- Designing a single PRDS system for handling steam & water with turndown ratio of **30:1**.
- Generally, the standard turndown ratio which can be achieved through a single PRDS system is **10:1**.
- Additionally, this was a very high pressure alloy steel PRDS system, with design parameters of 111 kg/cm^2 & 540°C.

Solution offered by IndiTech

We designed & manufactured a tailor-made single PRDS system to meet this special requirement. The entire steam flow variation was handled by a single steam pressure control valve with highly customized valve internals. The water flow variation was accommodated by using 2 separate desuperheaters. Our system was capable of providing **30:1** turndown ratio as per the customer's exact requirement. Also, the customer was able to achieve the exact desired steam outlet pressure & temperature.

As a result, the customer was extremely satisfied with the solution offered by us.

Impact / Benefits to the Customer

Our PRDS system helped the customer with:

1) Operational benefits
2) Reduction in space required
3) Substantial reduction in cost

The customer's Project Team was very happy that we could operationalize their new project to the complete satisfaction of their Production Team.

IndiTech

Site Installation Images