

CASE STUDY

Go-Co Installation – China Steel Corporation



The Company

Situated in the city of Kaohsiung, Taiwan, China Steel Corporation is one of the largest steel corporations in Asia.

The Challenge

In October 1996, China Steel installed and commissioned two filter bag dust collectors in their casting operation. As an internationally accredited ISO 14001/ISO 9002 organisation, China Steel puts great emphasis on its environmental protection programs.

After three years of extensive research and study, China Steel selected the Goyen Pulsejet Clean Air System to be used in the two filter bag dust collectors of this project.

This project consists of two baghouses, with 294 filter bags in each compartment and 14 bags installed onto each blowpipe. The number of membrane valves installed onto one header is 21, using the remote pilot control method for better protection of the pilot solenoid valves.

The Solution

Using the design parameters supplied by China Steel, Goyen was able to use its extensive laboratory experimental data -the GO-CO Computerised Design, to simulate an actual cleaning system design in order to achieve the optimal jetpulse cleaning efficiency (see Table 1 for a GO-CO Design Printout).

The Goyen products supplied to China Steel for this project were:

- 12,440 x Goyen venturi nozzles, made of aluminium die cast.
- 900 x Goyen RCA50T membrane valves.
- 84 x RCA3-8V8 and 42 x RCA3-8V6 enclosures pre-assembled with pilot solenoid valves, 10 Vac, 60 Hz.
- Various spare parts and installation tools.

The Results

Goyen revisited China Steel in October 1998 and was pleased to learn from the customer's feedback that:

- All Goyen pilot and membrane valves had completed over 350,000 cycles without a single replacement of any spare part.
- None of the 112,348 filter bags, made of Taiwanese fabrics, had been replaced.
- All Goyen components had achieved their claimed field quality and durability.
- The GO-CO design has produced optimal cleaning system efficiency and a cost effective installation.



GO-CO CLEANING SYSTEM DESIGN SPECIFICATIONS



| Blowtube Details | | Recommended Values |
|--------------------------------|---------------|--------------------|
| Operating Header Pressure | 490 kPa | 300-750 kPa |
| Length of Blowtube | 4100 mm | 25-5000 mm |
| Internal Diameter of Blowtube | 52.5 mm | 26.8, 40.9, 52.5 |
| Bends between Valve/Blowtube | 1 bends | 0-3 |
| Electrical on Time of Solenoid | 150 millisecs | 30-300 millisecs |
| Filters per Blowtube | 14 filters | 1-30 |
| Filterbag Diameter | 152 mm | 100-155 mm |
| Filterbag Length | 8.05 metres | 0.3-8.0 m |
| Air/Cloth Ratio | 0.024 m/sec | 0.005-0.075 m/sec |
| Head Loss Across Filter | 1000 Pascals | 375-2000 Pascals |
| Cleaning Velocity Factor | 2 | 1-2 |
| Cleaning Flow per Filterbag | 138.5 l/sec | |

| Results | |
|-------------------------|-----------------|
| Free Air Consumption | 185.1 litres |
| Mechanical on time | 355.1 millisecs |
| Initial Header Pressure | 490 kPaG |
| Final Header Pressure | 239 kPaG |
| Peak Blowtube Pressure | 398.1 kPaG |
| Final Blowtube Pressure | 207.1 kPaG |
| Header Volume | 75 litres |

Valve Selection: WCA50T

GOCO 7.1

Calculate Print

Exit ← ? Calculation Successful, print data or try new settings...

How Does The Go-co Computer Program Work?

Goyen's GO-CO program is a sophisticated computer model that was developed using data acquired through years of testing and validated by the Computational Fluid Dynamics (CFD) technique. By taking the operating conditions of China Steel's baghouse and inputting this information into the GO-CO computer program, the OPTIMUM Cleaning System is calculated (see Table 1).

Benefits

Combining the GO-CO computer results with Goyen's in depth knowledge of Cleaning Systems, Goyen is able to recommend the correct valves, nozzles, venturis and controller for every baghouse design. Benefits to customers include:

- Considerable reduction in operating costs
- Significantly better cleaning performance
- Reduced air consumption
- Increased bag life
- Maintenance time minimised

