

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.

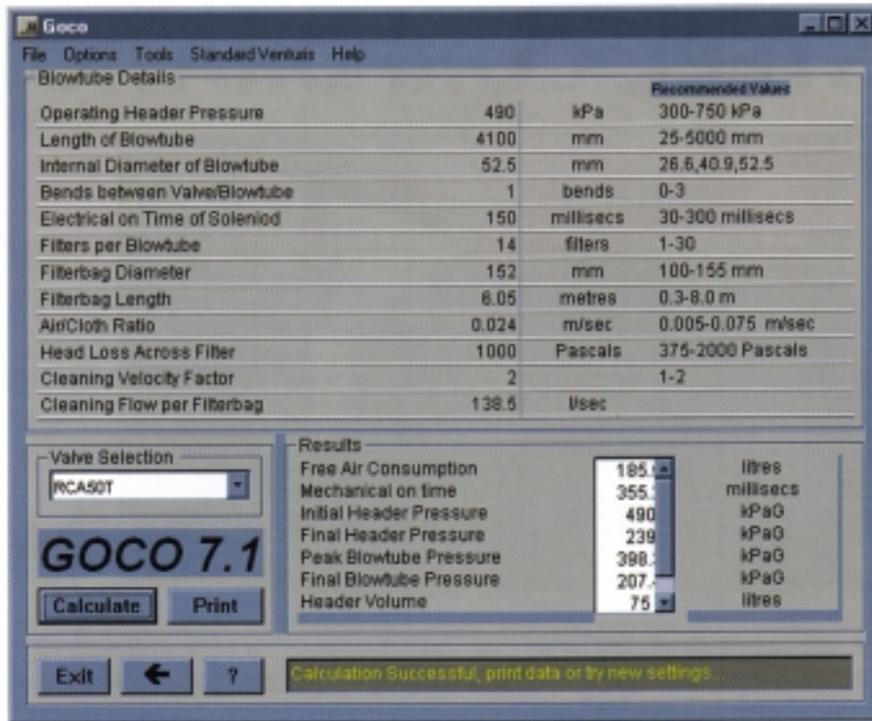
The Results

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	26.6,40.9,52.5
Bends between Valve/Blowtube	1	bends	0-3
Electrical on Time of Solenoid	150	millsecs	30-300 millsecs
Filters per Blowtube	14	filters	1-30
Filterbag Diameter	152	mm	100-155 mm
Filterbag Length	6.05	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	

Valve Selection	Results	Unit
WCA50T	Free Air Consumption	185.1 litres
	Mechanical on time	355.1 millsecs
	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

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 Steei'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

