



particle  
 가 0.1 10  $\mu\text{m}$   
 가 Siegel  
 150 mm<sup>2</sup>  
 0.1 10  $\mu\text{m}$   
 Siegel  
 Wet ( 가 )

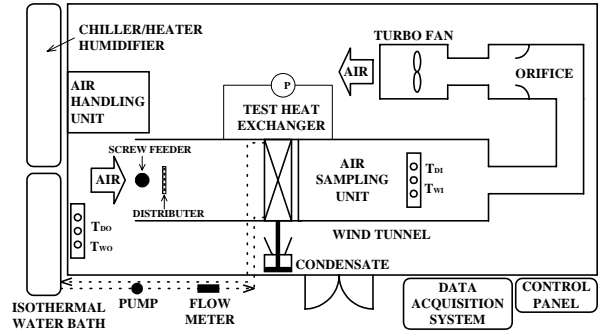


Fig. 1 Schematic diagram of the fouling wind tunnel installed in a psychrometric calorimeter

(Wet Dry )

가  $\pm 3\%$

2.

1 m/s

2.1

가

”(KS C 9306)<sup>(7)</sup>  
 27

“ 19.5 ,

Fig. 1 가

2.2

JIS 11 (8)  
 0.1 10  $\mu\text{m}$

(3S System, 7,000 x 8,200  
 x 3,000 mm<sup>3</sup>) , 가 가

2.9 3.1 g/cm<sup>3</sup>,  
 1.6 2.3  $\mu\text{m}$  가 SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>,  
 Fe<sub>2</sub>O<sub>3</sub> . Table 1

(screw feeder)

Vacuum transducer pump (Air-vac, TD260H)  
 50 mesh

310 x 210 mm<sup>2</sup>

가 (5 ) (430 kg/hr)

2.3 가  
 Table 2

Fig. 2

(5,6)

310 x 210 mm<sup>2</sup> 18 fpi (slit)  
 가

Table 1 Material properties of the test dust

Density (g/cm <sup>3</sup> )		2.9	3.1
Median Diameter (μm)		1.6	2.3
Size Distribution (μm)		0.1	10
Chemical components (%)	SiO <sub>2</sub>	34	40
	Al <sub>2</sub> O <sub>3</sub>	26	32
	Fe <sub>2</sub> O <sub>3</sub>	17	23
	MgO	0	7
	TiO	0	4
	CaO	0	3
L.O.I.		0	4

Table 2 Specifications of the finned-tube heat exchanger

Parameter		Dimension
Coil	Width	310 mm
	Height	210 mm
Staggered Tube	Diameter	7 mm
	Pass No. (Pitch)	10 (21 mm)
	Row No. (Pitch)	2 (12.7 mm)
Slitted Fin	FPI (Fins/Inch)	18
	Thickness	0.1 mm



Fig. 2 Photograph of the finned-tube heat exchanger.

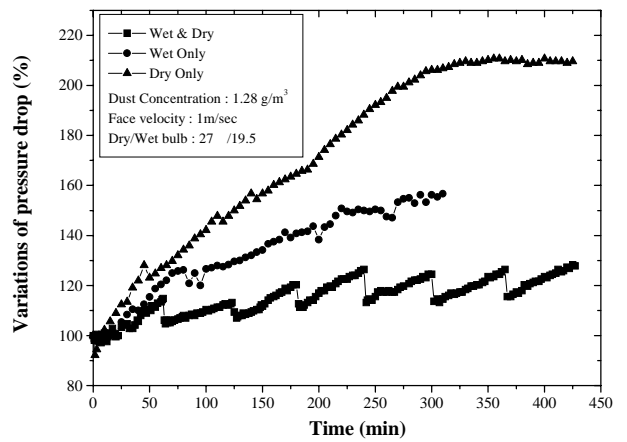


Fig. 3 Effects of surface conditions of the heat exchangers on the pressure drop.

3.

3.1

가 가  
 가 가  
 가  
 Wet  
 Wet  
 Wet

, Wet  
 210% 가  
 157% 가  
 Wet  
 Wet  
 가 가  
 Wet  
 Wet

Fig. 3

, Wet

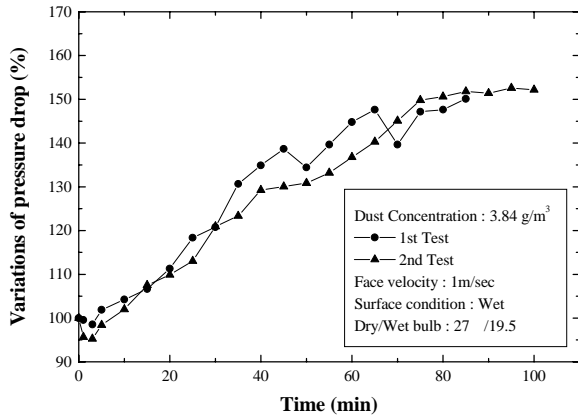


Fig. 4 Variations of the pressure drop due to particulate fouling in the finned-tube heat exchangers.

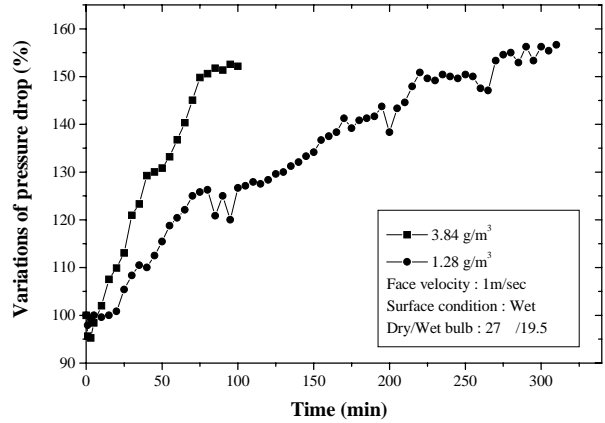


Fig. 6 Developments of the pressure drop as a function of dust concentration.

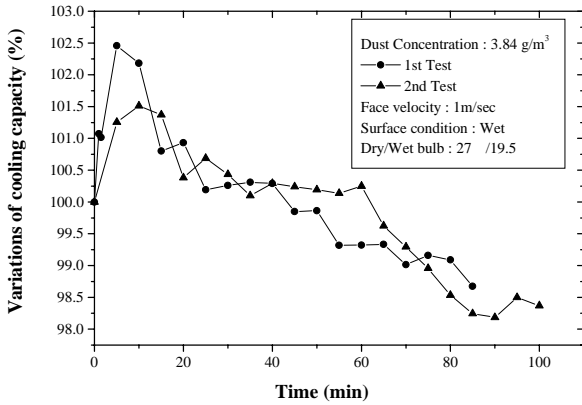


Fig. 5 Variations of the cooling capacity due to particulate fouling in the finned-tube heat exchangers.

57%

3.3  
 Fig. 6

1.28 g/m<sup>3</sup> 3.84 g/m<sup>3</sup>  
 3 가  
 157%

100 300 3

가  
 Bott<sup>(2,3)</sup>

Fig. 7

3.2

Fig. 4 5 가

2

57%

2%

3.4

2%  
 (5,6)

7

45%

Fig. 8

1 m/sec  
 1.5 m/sec

0.5

4

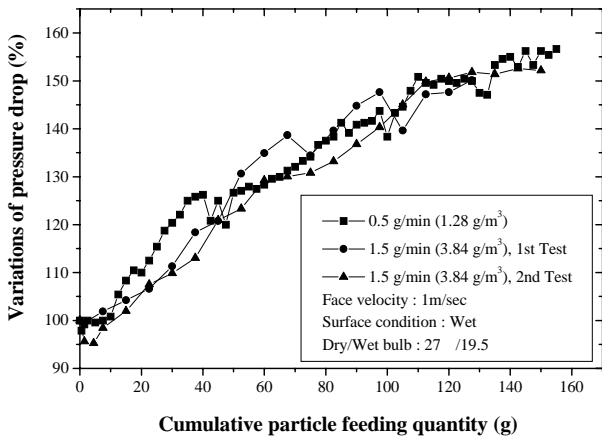


Fig. 7 Effects of cumulative particle feeding quantity on the pressure drop.

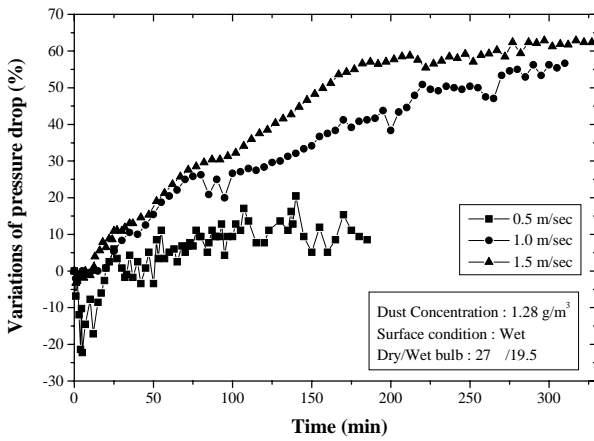


Fig. 8 Developments of the pressure drop as a function of face velocity.

0.5 m/sec 113%, 1.0 m/sec  
 157%, 1.5 m/sec 163%

가 가  
 가 가  
 가 가  
 가 가

4.  
 가  
 (1) 210%  
 Wet 157%  
 (2) 1 m/sec  
 가 Wet  
 57%  
 2%  
 가 가  
 (3) 가  
 가  
 (4) 가  
 가  
 가가

LG ( )

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