CONDENSED MANUAL AND HANDBOOK FILTER MEDIA AND FABRIC FILTER ASPECTS

(FOR LOW, MEDIUM, HIGH TEMPERATURE & HOT GAS FABRIC FILTRATION)

Pleated dust cartridge collectors

Super High Efficiency cleanable HEPA Filters

2007 Edition

Published by:

FILTER MEDIA CONSULTING (Now a part of Business Co-ordination House – BCH)



Contact Details:

Business Co-ordination House Pvt. Ltd. (BCH)

UGF - 3 & 4, Arunachal, 19 Barakhamba Road, New Delhi- 110001, India.

Tel.: +91- 9810081300 Fax: +91 -11- 23316008 Email: samir@bch.in

Website: www.bch.in; www.filtermedia-consulting.com

Copyright[®] - Business Co-ordination House Pvt. Ltd.

No part of this report may be reproduced in any form (including electronic, mechanical, photocopying, recording), nor used, nor printed without written permission from Filter Media Consulting and Business Co-ordination House Pvt. Ltd.

TABLE OF CONTENTS

	Page
INTRODUCTION	1
FILTRATION THEORY	2
PM 10 LEGISLATION	5
VARIABLES IN DESIGN THEORY (FABRIC)	7
FABRIC FUNDAMENTALS	8
SELECTING FILTER FABRICS FOR BAGHOUSES	11
FIBER TABLE	12
TRIBOELECTRIC SERIES	14
MATERIALS/FIBERS	15
Aramid (for instance Nomex ^R , TEIJINCONEX ^R)	15
Glass	16
Homopolymer Acrylic	16
Teflon® - Toyoflon® - Profilen® - Rastex®	16
Polypropylene	17
Sulfar (Ryton®, Procon®, Torcon®, BAYER PPS, TEIJIN PPS)	17
Polyester Metal Fibers	17
P84	17 18
Others	18
pH SCALE	19
GLOSSARY OF TERMS	20
HIGH TEMPERATURE FILTER MEDIA (FABRICS)	24
SPARK BLOCKER ^R	26
FABRIC SELECTION GUIDE	27
SELECTION FOR FILTER MEDIA (FABRICS)	28
Woven Fabrics	28
Knitted Fabrics	29
Needled Fabrics	29
Laminates	29
Needled Felt Surface Treatments	30
FINISHES OF WOVEN GLASS FABRICS	31
IMPORTANT CHARACTERISTICS OF FINISHES	31
WOVEN GLASS FILTER BAGS ON CAGES	32
CLEANING METHODS	38
Conventional Pulse Jet	38
Low Pressure Pulse Jet	38
Sonic Cleaning	39
Staclean TM Diffuser	40
Inlet Diffuser	41
Aspects of Energy Savings	42
Energy Chart	43
FILTER BAG CRITERIA	44
Filter Bag Tension	44
Bag Size	44
Filter Bag Ring Spacing	45
Bag Reach	46
Bag Hardware	46
Bag Reconditioning	47 47
Factors of Bag Life Failure Influence	47 48
Some Areas to Improve Filter Bag Life Garland Effect	48 49
FILTER MEDIA FABRIC TESTING - USA	50
TEST PROCEDURES	51

DOP TEST	55
LABORATORY EXAMINATION OF USED FILTER MEDIA	56
FABRIC EVALUATION AFTER FAILURE (RECOMMENDATION)	57
HYDROLYSIS	58
SURFACE TENSION OF FILTER MEDIA	59
ACID DEW POINT	60
NODULAR DEPOSITS	65
REDEPOSITION IN PULSE JET FILTERS	65
KEYS TO FILTER PERFORMANCE	66
TYPICAL COMPARATIVE COLLECTION EFFICIENCIES	67
START-UP PROCEDURE AND	68
ITS IMPORTANCE FOR FABRIC PERFORMANCE	
Filter Bypass	68
Seal Air System	68
The Full Module or Hopper Heaters	68
Proper Insulation	69
Module Pilot Tubes	69
Inlet Opacity Monitor	69
Reverse Flow Fan Size	69
Proper Temperature Specifications	69
Flow Inspection and Checkup	69
START-UP PRINCIPLES	70
Precoat Bags with Fly Ash	70
Conditioning of New Filter Bags	70
Start-Up Through the Bypass	71
Dedicate Specific Modules for Start-Ups	72
Rapid Start-Up	72
Add Modules as Required	72
Clean Bags After Start-Up	72
EXPLOSION HAZARDS IN DUST COLLECTORS	73
BROKEN BAG DETECTOR	74
DUST LEAK DETECTOR	75
"SIDE-STREAM SEPARATORS"	76
TYPICAL AIR TO CLOTH RATIOS (Pulse Jet)	77
TYPICAL AIR TO CLOTH RATIOS (Shaker)	80
CARTRIDGE COLLECTORS	83
NEW SINTERED POLYMER PLASTIC FILTER MEDIA	92
COMPACT FILTER ELEMENTS	93
INDUSTRIAL AND UTILITY COAL-FIRED BOILERS	95
FLY ASH RESISTIVITY	98
FLUID BED COMBUSTION	99
FLY ASH UTILITIES	99
SPECIFICATION PROPOSALS - INSIDE COLLECTION SYSTEMS	100
PERFORMANCE GUARANTEES	100
DESIGN PARAMETERS AND OTHER DETAILS	101
REVERSE AIR BAGHOUSE	106
DETAILED SPECIFICATIONS FOR PULSE JET COLLECTOR	107
GAS VELOCITY AND DISTRIBUTION	108
SO ₂ DRY SCRUBBING SPRAY DRYER/BAGHOUSE SYSTEMS	110
"Twin" Technology	110
SO ₂ Dry Scrubbing Process Definition	110
SO ² Dry Scrubbing Technology Process Definition	110
Principle of Spray Drying Systems	111
Spray Dryer Equipment	112
Chemical Reaction in SO ₂ Dry Scrubbing Systems	113
Definition of Stiochiometry	114

Definition of Sorbent Utilization	114
Factors Influencing the Selection of Filter Media	114
Available Fibers and Their Main Characteristics	115
Comparison of Wet vs. Dry Scrubbing	115
Obvious Advantages of Fabric Filter vs ESP	117
WASTE INCINERATION - A MUNICIPAL PROBLEM	117
APPLICATION OF INCINERATORS AND EMISSION CONTROL	118
PHYSICAL COMPOSITION OF TYPICAL MUNICIPAL REFUSE	119
CLEANABLE HEPA FILTERS	121
THE HOT-GAS OPPORTUNITY	124
PROTOTYPE COLLECTOR FOR HOT-GAS	126
HOT-GAS FABRIC FILTRATION QUESTIONNAIRE	129
TROUBLE SHOOTING OF FABRIC FILTERS (BAGHOUSES)	132
TROUBLE SHOOTING (A typical example)	135
RECOMMENDATIONS FOR MAINTENANCE LOG	139
Start-Up Log	140
Bag Failure Data Sheet	141
MOST COMMON PROBLEMS WITH BAGHOUSES	142
PROBLEM AREAS ON BAGS	144
PROBLEM/CAUSE/REMEDY	147
SUGGESTED MAINTENANCE AND INSPECTION SCHEDULE	159
DIFFERENT INSPECTION LEVELS	161
SUGGESTED FABRIC FILTER FIELD INSPECTION REPORT FORMAT	162
A. General Plant Data and Application	162
B. General Observations Prior to Actual Inspection	163
C. Process Information	163
D. Dust Characteristics (Prior to Control)	164
E. Collection System(s)	165
F. Dust Handling System(s)	166
G. Instrumentation	166
H. Operating Parameters - Design and Actual	167
I. Operating Experience/Maintenance Aspects	168
J. Conclusions/Recommendations	170
K. Other Notes, Comments	171
DISCLAIMER	171
ARTICLE	172

ORDER FORM

Mail to:

SAMIR GUPTA, Managing Director BUSINESS CO-ORDINATION HOUSE PVT. LTD. UGF – 3 & 4, Arunachal, 19 Barakhamba Road, New Delhi – 110 001 (India). Tel. No.+91-9810081300 Fax No. +91-11-23316008 E-mail: samir@bch.in

We wish to subscribe to this special report. CONDENSED MANUAL AND HANDBOOK FILTER MEDIA AND FABRIC FILTER ASPECTS 2007 Edition

Subscription Price: INR 12,000 (Indian Rupees Twelve Thousand Only)
Plus 10.3% Service Tax, Plus shipping and handling
(Out of India courier charge INR 3500 & Within India courier charge INR 1200)

Payment Method:

Please remit proceeds to Swift Code SYNBINBB 126, Syndicate Bank FXPC, New Delhi For credit to account no-9036-304-0000019 of Business Co-ordination House Pvt. Ltd. *OR*

Payment must be received prior to shipping the hard copy of the report

Issue a demand draft in favour of Business Co-ordination House Pvt. Ltd. payable at New Delhi and send it to UGF - 3 & 4, Arunachal, 19, Barakhamba Road, New Delhi -110001(India) OR

Transfer the payment to account no-90363040000019, IFSC/RTGS Code- SYNB0009036, Bank name-Syndicate Bank, 19, Barakhamba Road, New Delhi-1, Company name- Business Coordination House Pvt. Ltd.