DUST SUPPRESSION SYSTEMS

By

M/s NASEQUIP Systems Pvt Ltd



DIRECTOR'S PROFILE



The Founder Director of **NASEQUIP** Systems Private Limited, Mr. Rajendran Nair, BE Mechanical from College of Engineering Trivandrum, India is having more than four decades of rich industrial experience. He has more than three decades of practical experience in GAS CONDITIONING SYSTEMS and has successfully designed, manufactured and installed more than 500 no's of customized systems in India and Overseas. Undergone training in Germany & USA for nozzles. Undergone training in Germany for DeNox Systems. Practice based knowledge is his USP. Visited Cement Plants worldwide and presented various papers in international forum.



Director of **NASEQUIP** Systems Private Limited, Mr. Manish Ganguli (Alumni - IIM Ahmedabad),MBA in Marketing Management has overall 25 years of enriching industrial experience and has worked with leading cement companies in near past. Undergone Training in Australia for Environmental Monitoring Systems. Presented papers on innovative monitoring and abatement technologies for emission. Participated in various international exhibitions & seminars worldwide.



WHAT IS DUST?

!!! DUST IS SIMPLY DEFINED AS SOLID PARTICLES CARRIED BY THE AIR CURRENT !!!



DUST IS GENERATED WHEN

- MATERIAL IS BROKEN BY IMPACT, CRUSHING, GRINDING ETC.
- LOADING, DUMPING & TRANSFERING.
- BY WIND, BY MOVEMENT OF MACHINERY OR WORKERS.
- BY STACKING, RE-CLAIMING



DUST CAUSES

- HUMAN HEALTH HAZARDS.
- DAMAGE TO EQUIPMENTS.
- DIFFICULTY IN MAINTENANCE.
- HAZARDOUS TO ENVIRONMENT.



DSS APPLICATION POINTS

- JAW CRUSHERS
- LOADING TERMINALS
- DUMP HOPPERS
- STACKER RECLAIMERS
- STOCK PILES
- TRANSFER POINTS
- VIBRATING SCREENS
- OTHER OPEN AREAS



TYPICAL MATERIAL HANDLING CIRCUIT WHERE DUST NEEDS TO BE SUPPRESSED





HOW TO CONTROL DUST EFFICIENTLY?

• BASIC RESEARCH IN THE DEVELOPMENT OF DUST SUPPRESSION SHOWED THAT IF SUFFICIENT NUMBER OF WATER DROPLETS OF APPROXIMTELY THE SAME SIZE AS DUST PARTICLES COULD BE PRODUCED, PROBABILITY OF COLLISSION BETWEEN THE TWO WILL BE EXTREMELY HIGH.





METHODS OF DUST CONTROLLING

- PLAIN WATER DUST SUPPRESSION.
- DRY FOG TYPE DUST SUPPRESSION.
- FOAM TYPE SUPPRESSION.
- CANNON (SPRINKLER) TYPE
- DUST EXTRACTION



MAIN FEATURES OF THE NASEQUIP DUST SUPPRESSION SYSTEMS

- MOISTURE ADDITION TO THE MATERIAL CAN BE LIMITED TO LESS THAN 1% IN CASE OF DRY FOG SYSTEM
- THIS CAN BE INSTALLED AND COMMISSIONED WITHOUT ANY STOPPAGE OF THE PROCESS / PLANT
- POWER CONSUMPTION IS KEPT MINIMUM
- THIS SYSTEMS PRACTICALLY REPLACES THE COMPLICATED DUST EXTRACTION SYSTEM.
- ROUTINE MAINTENANCE IS LIMITED TO NOZZLES CLEANING AND HENCE OPERATING COST IS VERY LESS.
- SATISFIES THE STATUTORY REGULATIONS



SPRAY CHARACTERISTICS

PARAMETERS	PLAIN WATER	DRY FOG
DROPLET SIZE	200 MICRONS	10-50 MICRONS
NOZZLE SPRAY ANGLE	60 - 70	60
SPRAY PATTERN	HOLLOW CONE / FULL CONE	FULL CONE
WATER PRESSURE	4-5 BAR	2-3 BAR
FLOW RATE PER NOZZLE FOR CRUSHER, HOPPER ETC	3-4 LPM	NA
FLOW RATE PER NOZZLE FOR CONVEYOR POINTS	1.5 -2.5 LPM	0.5-0.8 LPM
AIR PRESSURE	NA	3 - 4 BAR
AIR CONSUMPTION	NA	7- 10 CFM



MAJOR COMPONENTS OF THE DS SYSTEM

PLAIN WATER SYSTEMS	DRY FOG SYSTEMS
CENTRIFUGAL PUMPS	CENTRIFUGAL PUMPS
DUAL FILTERS	DUAL FILTERS
PRESSURE SWITCHES	PRESSURE SWITCHES
SPRAY NOZZLES	SPRAY BAR ASSEMBLIES
SOLENOID VALVES	SOLENOID VALVES
SPRAY HEADERS	AIR REGULATING UNITS
LOAD SWITCHES	FLOW ACTIVATION UNITS
CONTROL PANEL	LOAD SWITCHES
	NASEQUIF

SPRAY HEADER FOR PLAIN WATER DSS



- HEADER SIZE:15-25 NB
- MOC: SS 304 / CS- A 106
- END CONNECTIONS
 :FLANGED/ THREADED / CAM LOCK



SYSTEM COMPONENTS



TYPICAL CONVEYOR DISCHARGE



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PLAIN WATER SPRAY INSIDE A DUMP HOPPER





DRY FOG DUST CONTROL





DRY FOG DUST CONTROL

LOCATION OF SPRAY HEADERS





DRY FOG DUST CONTROL





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CONTROL SYSTEM

TYPICAL CONTROL PANEL



PANEL CONSISTING OF

ON/OFF RELAYS

SELECTOR SWITCHES FOR A/M OPERATION

INDICATORS OF THE SPRAY ON/OFF IN VARIOUS LOCATION

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SPRINKLERS

FLOW RATE	20-160 LPM
OPERATING PRESSURE	4-6 BAR
SPRAY COVERAGE	15-30 M RADIUS
ANGLE OF ROTATION	180 / 270 / 360 DEG



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