ELECTROSTATIC DUST MITIGATION DEVICE

Reasons for Dust Suppression

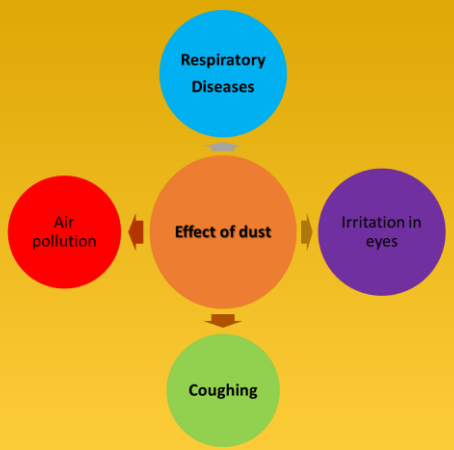
The reasons for suppressing dust are numerous and varies from industry to industry; however, the main drawbacks are:

- Loss of valuable material
- Environmental degradation and health hazards
- Low visibility
- Explosion/oxidation
- Machine maintenance

About the Technology

The present invention and utility model discloses a multipurpose air-induced air-assisted high-range electrostatic spraying system based on induction charging principle for dust mitigation and environment protection. An induction charging based high-range electrostatic spraying system has been designed and developed at CSIR-CSIO, Chandigarh.

Impact of Dust on Human Health



Sponsoring Agency

Department of Science and Technology
Ministry of Science and Technology, Govt. of India
New Mehrauli Road, New Delhi – 110016
Website: http://www.dst.gov.in

Relevance of Technology in Present Time

Dust is a pervasive problem in handling bulk materials such as coal, cement, construction, demolition of buildings, thermal power plants *etc.* interfering with all aspects of operation. Dust suppression systems help to control the dust while improving efficiency.

Electrostatic dust mitigation device is highly useful in suppressing the dust particles entrained in the air and protects the environment in an efficient way. It produces uniform and fine spray particles that are nearly equal in proportion to dust particles.

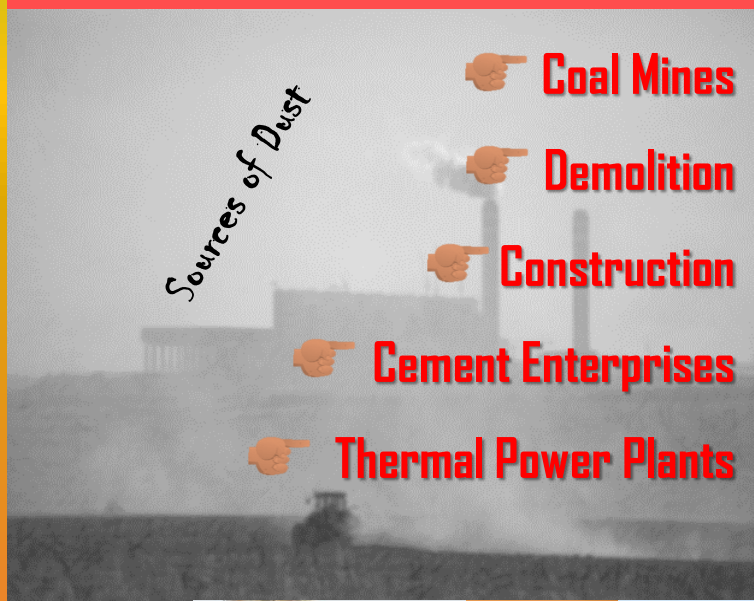
IPR Status

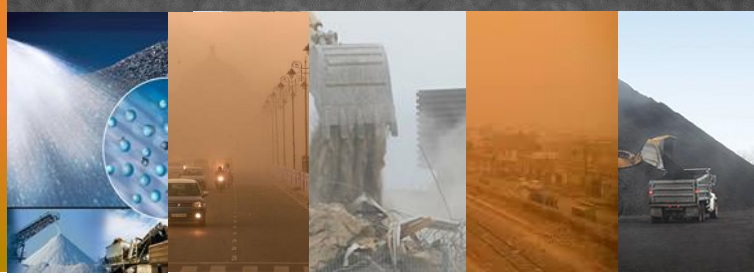
It is a patented technology (Filed)
National (Indian): 201711007875,
Date of Filing: 07.03.2017
PCT Patent: PCT/IN2018/050122,
Date of Filing: 06.03.2018

For more details, Contact,

The Director,
CSIR-Central Scientific Instruments Organisation
Sector 30 C, Chandigarh – 160030
Website: http://www.csio.res.in
Email: director@csio.res.in
Phone: 0172-26572190 (200/400)
Fax: 0172-26572267

ELECTROSTATIC DUST MITIGATION DEVICE





ELECTROSTATIC DUST MITIGATION DEVICE

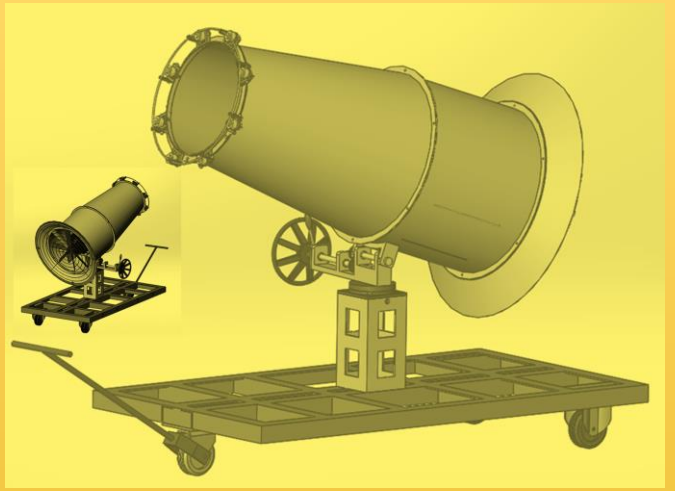
Principle of Operation

The droplets generated by conventional methods are bigger than respirable dust and the water droplets are not coming in contact with dust particles.

Charged particles generated from electrostatic spraying nozzles combine with foreign particles present in the naturally occurring environment and settle down very efficiently. Electrostatic spraying is a novel approach to eradicate undesirable foreign particulate matter present in the dusty environment.

Applications

- Coal mines
- Paper industry
- Cement industry
- Misting in rural area
- Thermal power-plants
- Hotels and restaurants
- Stone crushing industry
- Clay and brick manufacturing
- General pollution/ Airborne dust
- Industrial sanitization and disinfectants

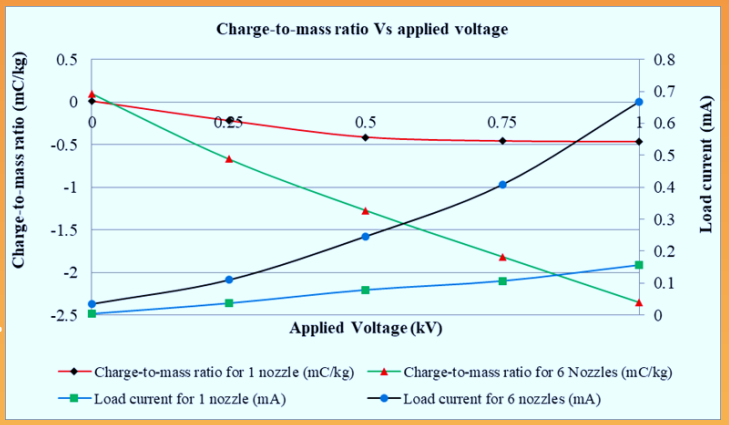


Advantages

- Charged droplets are more effective in suppressing dust particles
- Globally competitive, at par with international standards
- Cost effective solution with higher efficiency
- Mobilization is very easy
- Easily mounted on trolley or moving vehicle
- Produces fine spray droplets
- Anti-corrosion resistance cannon material
- Less amount of water is required
- Easily accessible in remote areas
- Enhancing the visibility range
- Long range dust suppression
- Easy to operate and safe
- Low power consumption
- Low maintenance

What it does ?

- Very effective when it comes to suppress the particulate matter (PM 2.5 and PM 10)
- Reduces the exploitation of natural resources



Technical Specifications

- Flow Rate (Present Model): 3 L/min
- Number of Nozzles : 10
- Material : GS/MS
- Output Velocity : 25-30 m/s
- Coverage/Distance : 25-30 m
- Operating Pressure : 3-4 Bar
- Operating Voltage Range : 1-1.5 kV
- Power Source : DC Battery
- Droplet Size : 40-60 µm
- Uniformity Coefficient : 1.71
- Resistivity Range : 10^{-1}–10^{3} Ω-m
- Rotation : 0 To 360°
- Elevation : 0 To 60°
- External Air Compressor : Required