



BISAF Ltd.
Cleaning The Air We Breathe

Improving Dangerous Air Quality For Construction Workers

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Presentation Outline



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- Why is Diesel exhaust dangerous?
- Why is this a problem for construction workers?
- What are the requirements for employers and managers to protect workers from Diesel Exhaust?
- The Particulator[®] - a new flexible DPF concept to conveniently remove a machine's particulate emissions and improve worker safety

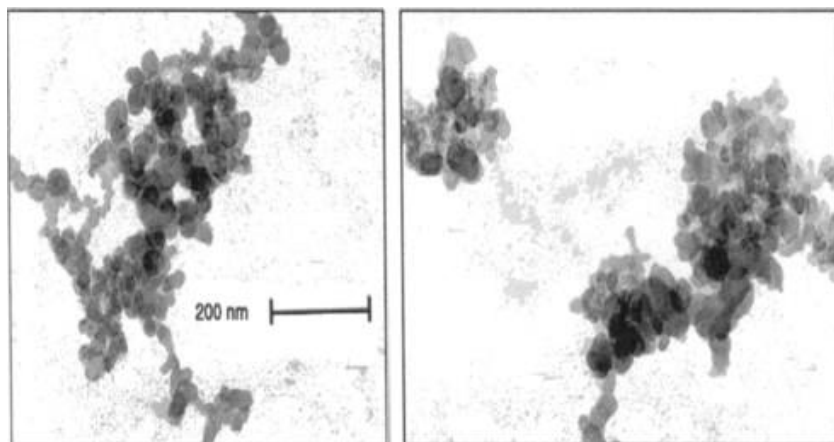


Why is Diesel Exhaust Dangerous?



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- Contains gaseous pollutant emissions and particulate (soot)
- Gaseous emissions - NO_x, HC, CO
- Particulate - microscopic particles of carbon with adsorbed hydrocarbons, some carcinogenic

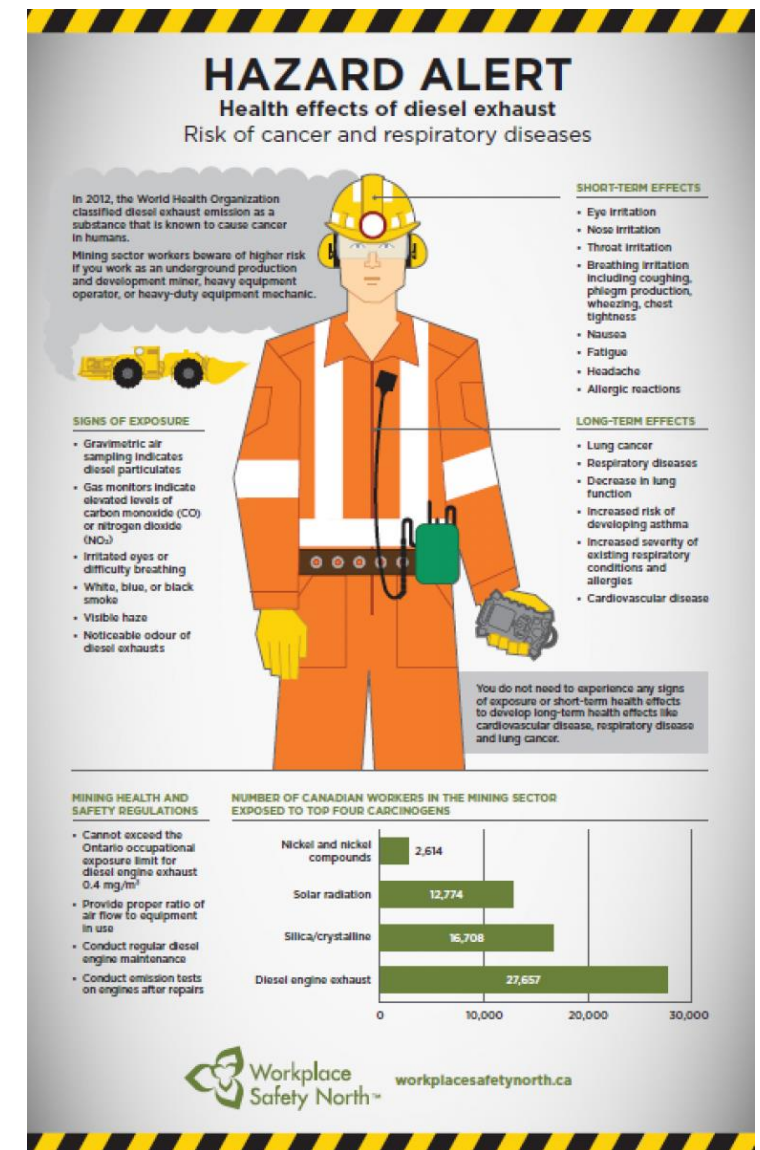


Diesel Particulate - What are the Dangers?



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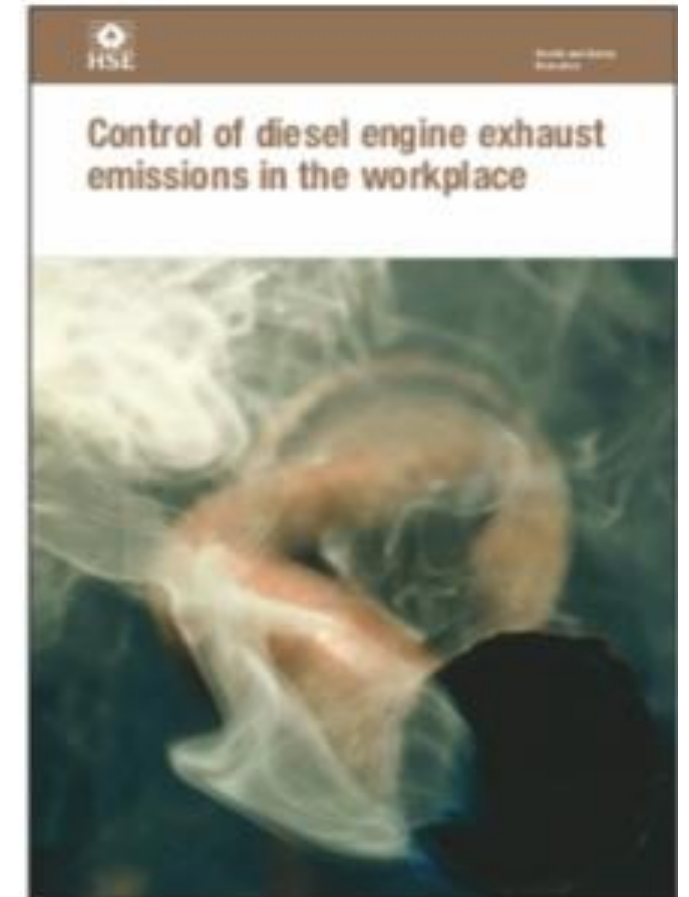
- Micro meter sized particles (1 thousandth of a millimetre)
- Breathed deep into the human lungs, enter the blood stream and access other parts of the body
- Diesel particulate is classified by WHO as carcinogenic to humans causing an **increased risk of lung cancer**
- Increases risk of heart and lung disease
- Nausea, irritation of airways and dizziness



Occupational Health



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- Diesel particulate - thousands of premature deaths each year in London
- The HSE has highlighted the dangers of Diesel exhaust emissions in workplaces.
- Hundreds die of lung cancer each year due to occupational exposure in UK construction
- EU 2018 - limit for concentration of Diesel exhaust in the workplace. To be measured by carbon particulate level.
- In UK, Diesel exhaust is covered by COSHH regulation - employers have a legal obligation to protect workers.



Construction Machinery Emissions



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- Latest Stage V regulations do not require DPFs on the smaller machines less than 19 kW.
- Before stage V there were no PM limits for <19 kW machines.
- Small machines more likely to be used in confined spaces.
- Workers operating Diesel engines in confined spaces are vulnerable.
- A DPF can remove Diesel particulate at source.



The Particulator®



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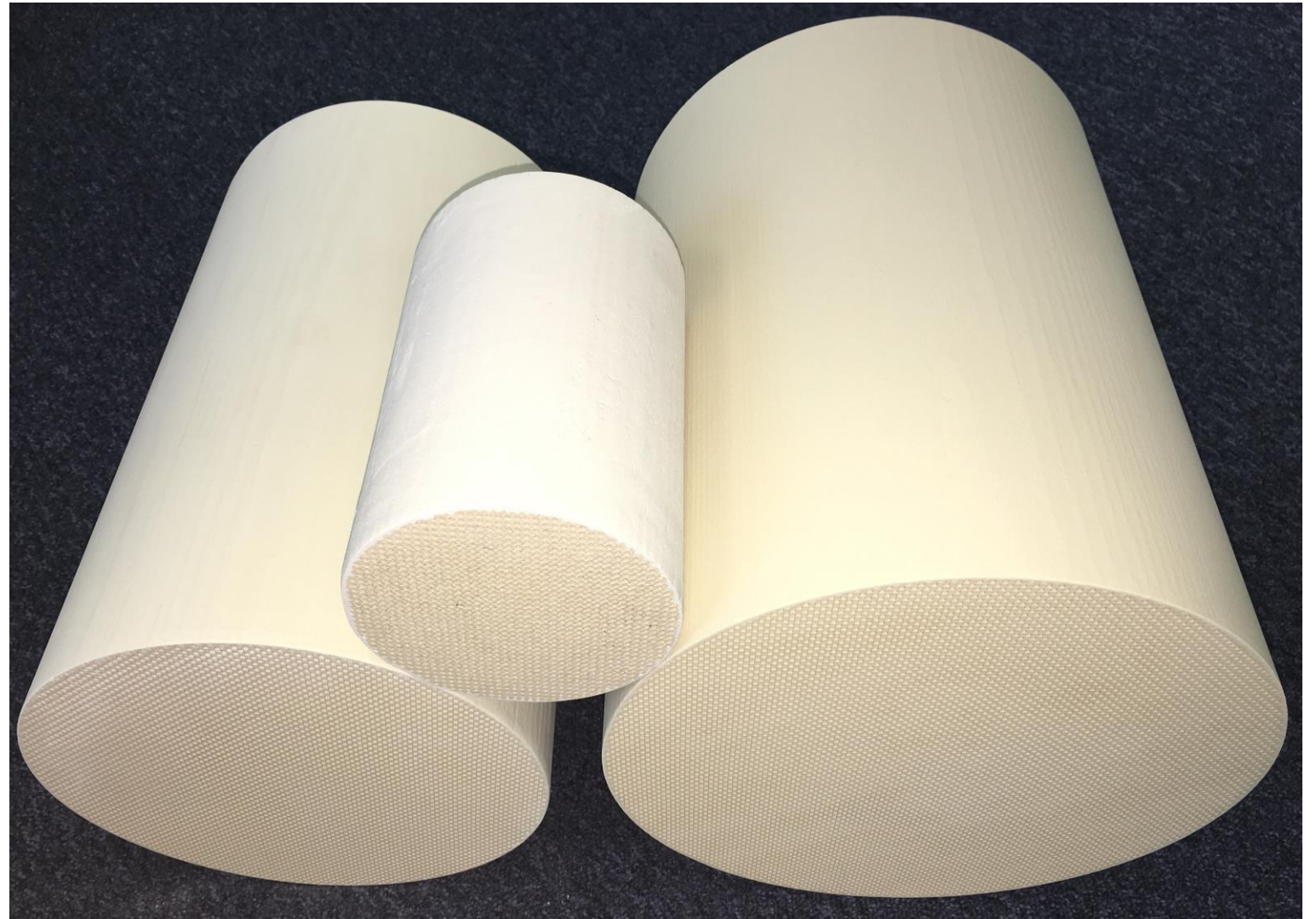
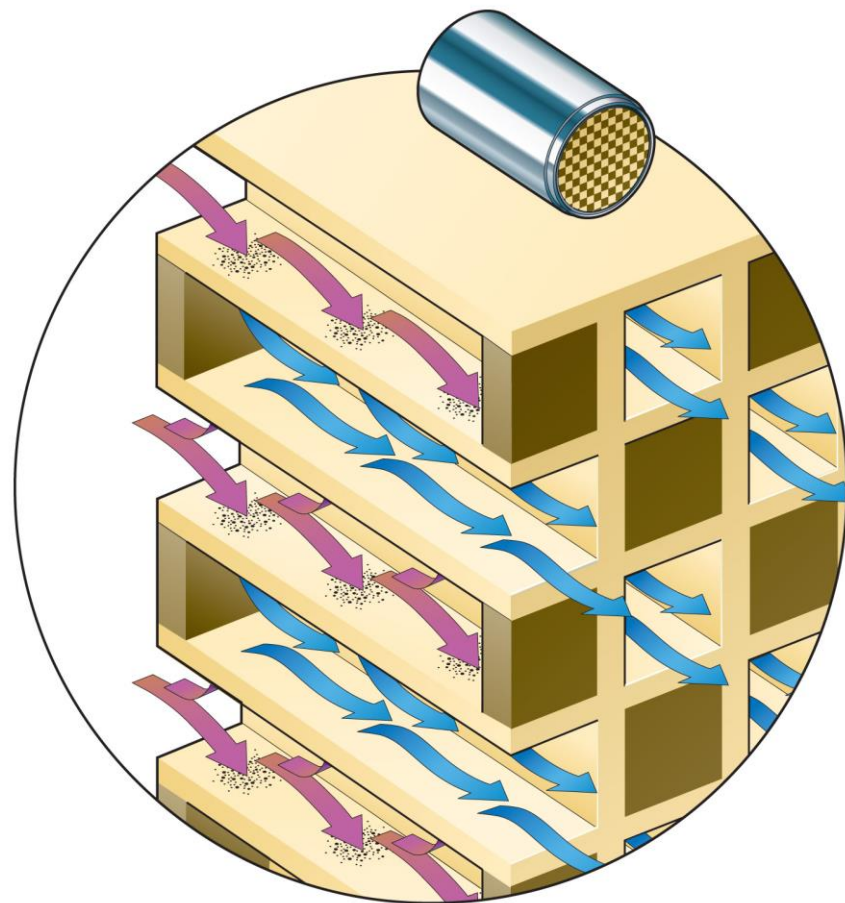
- The Particulator® is an effective and convenient DPF.
- Uses the same filter technology as OEMs. Independently tested at 99.98% removal of Diesel particulate.
- Bolts to an easily installed frame for quick fitting and removal - especially useful for hire industry.
- Onboard electrical heating to regenerate filter in 30 minutes.
- Back pressure monitor shows operator when to regenerate.
- Robust construction and operation thoroughly tested on site.



Full Flow Ceramic DPF



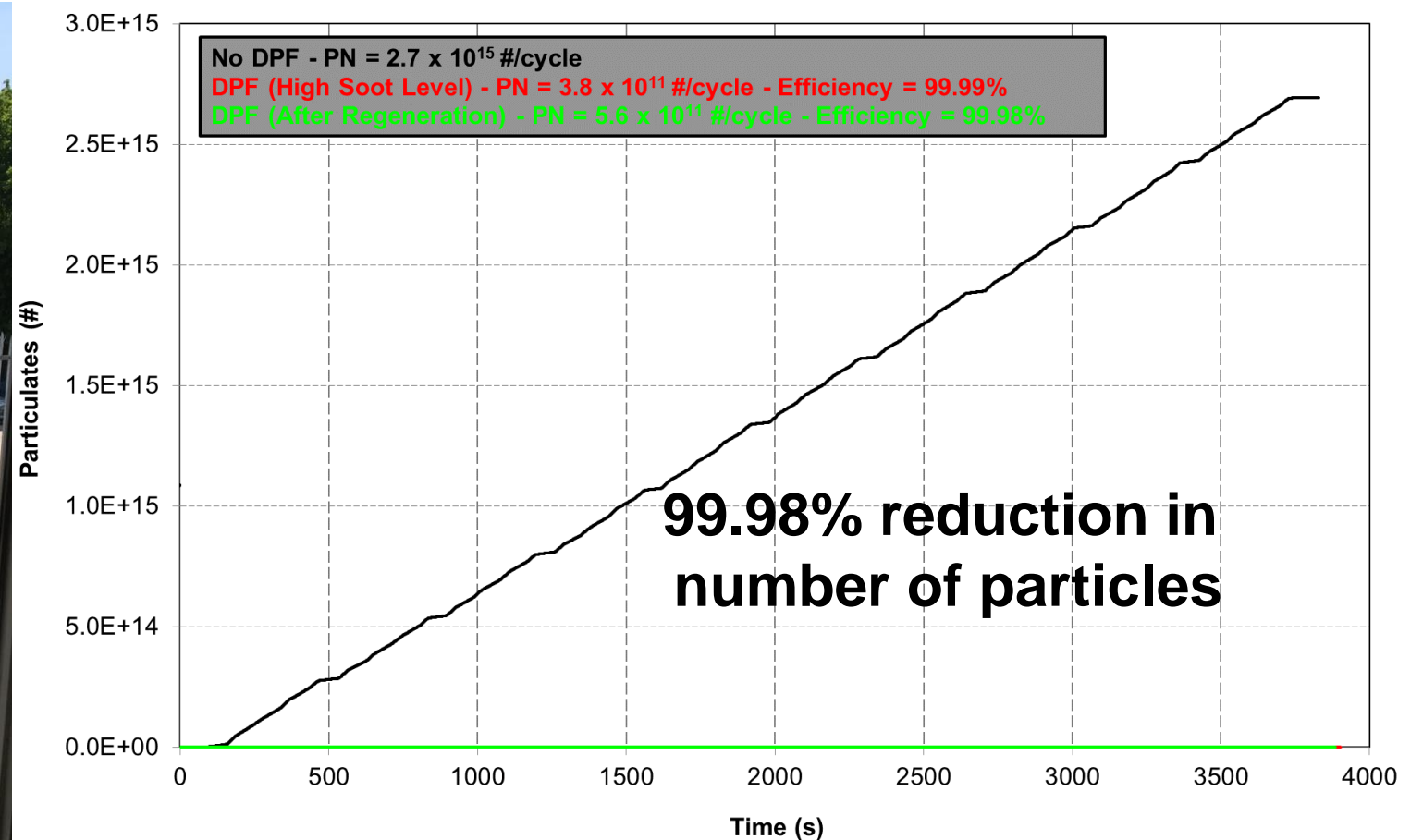
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Emissions Laboratory Testing



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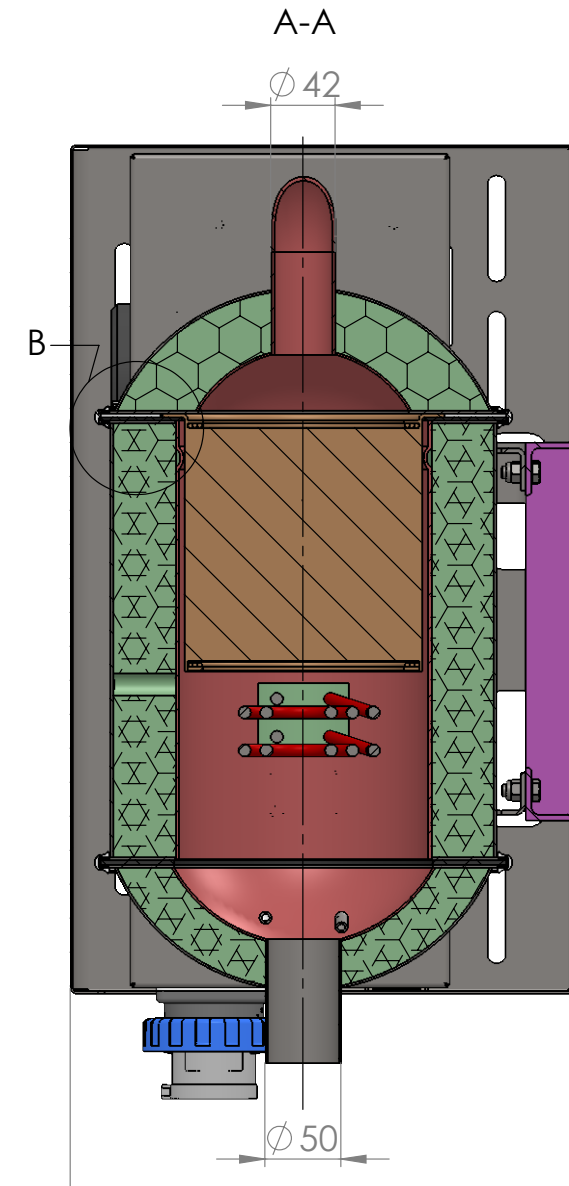


Electrical Regeneration



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- Inbuilt electrical heater burns off trapped soot
- Just plug in 110V supply and press start button
- Burning cycle lasts 30 minutes then ready to use again



Backpressure Monitor



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- Traffic light system shows filter soot level
- Regenerate filter when orange light shows
- Back pressure logged for fault diagnosis

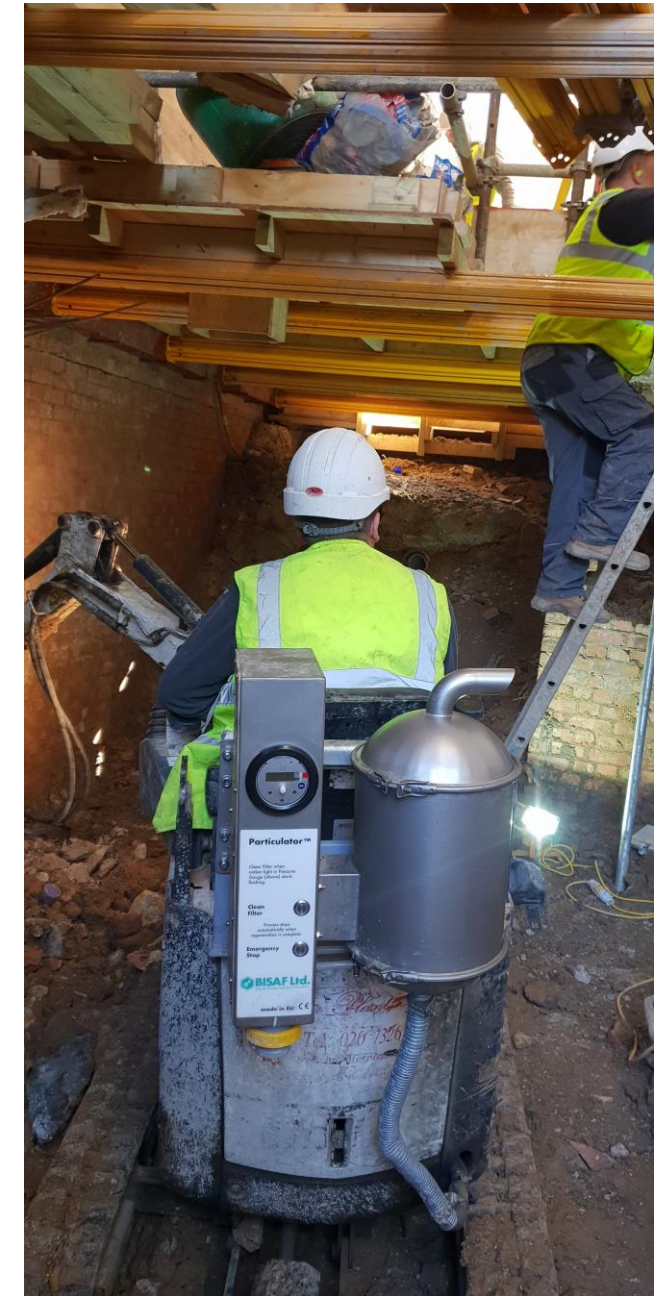


Robust and Durable In Use



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- Manufactured in stainless steel.
- High quality electrical components – CE marked and IP55 rated.
- Extensively tested on site for trouble free operation.



Summary



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- Diesel particulate is hazardous to health
- Smaller construction machines are high emitters of particulate and often used in confined spaces
- Diesel exhaust in workplace controlled by COSHH, HSE and soon by EU legislation
- BISAF Particulator[®] is an effective solution that is easy to fit and operate





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Thank You For Your Attention!

Come and Visit Us on Stand D41

