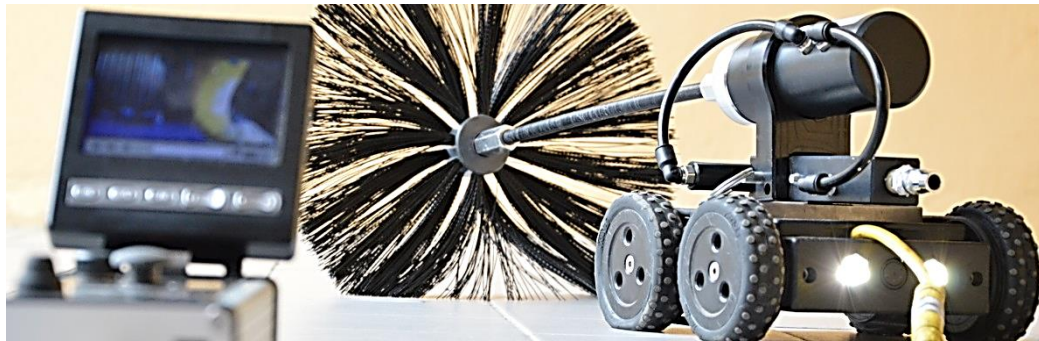


# INTRODUCTION

## Duct Cleaning Services

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## Indoor Air Quality (IAQ) Facts

- The USA Environmental Protection Agency (EPA) is the leading authority on environmental issues has confirmed that poor Indoor Air Quality (IAQ) is the main cause for Sick Building Syndrome (SBS) and the Heating Ventilation and Air Conditioning System (HVAC) is the main contributor for biological, particulate and chemical contaminants indoors.
- In 1984 the World Health Organization (WHO) confirmed that Sick Building Syndrome (SBS) was a major modern day health problem, having estimated that up to 30% of new and old buildings are subjected to excessive complaints related to poor Indoor Air Quality (IAQ).
- Further studies made by National Institute for Occupational Safety and Health (NIOSH) found that more than 50% of IAQ problems are related to poor ventilation and related maintenance.
- People in developed and industrialized countries spend up to 90% of their time indoors, mostly at the working place and this is a major concern as studies conducted by the NIOSH, EPA and others show that Indoor Air Quality (IAQ) in many cases is up to 70 times more polluted than outside air.

The USA EPA has noted that up to 20% or 1/5 of the occupants of sick buildings suffer from various symptoms of SBS. These health effects are due to poor IAQ and may be experienced soon after exposure or possibly years later and can be categorized in the following order:-

- Immediate Effects - irritation of the eyes, nose and throat, headaches, dizziness and fatigue.
- Short-Term Effects - which include asthma, hypersensitivity pneumonitis and humidifier fever.
- Long-Term Effects - which include some respiratory diseases, heart disease and cancer that can be severely fatal.

Economic losses due to poor IAQ and SBS is very high which is in form of:

- *Absenteeism*
- *Medical Treatment*
- *Hospitalization*
- *Lower Productivity*

It is estimated that an average of 140 square meter or 1500 square feet of area generates 18kg of dust per year. Even a slightest of 100mm of accumulated dust in air conditioning ductwork can reduce the system efficiency by up to 21%.

## Duct Cleaning Services

- It is well accepted by all authorities including EPA, NIOSH, ASHRAE, etc that HVAC System is the major contributor to poor Indoor Air Quality (IAQ).
- Replacing old and dirty air conditioning ducting is very expensive and virtually impossible to a certain organization.
- Cleaning and sanitizing the air conditioning ducting and chemical cleaning of Air Handling Units (AHU's) is the only effective and practical way solution to significantly improve Indoor Air Quality (IAQ).
- This approach costs less than 5% of replacement cost with a minimum or no disruption to normal business.
- Benefits reaped can be in the form of improved health standard; hence you and your employees should experience fewer symptoms of illness and respiratory problems.
- Air in office will be cleaner and fresher since poor indoor air is far more dangerous to breathe than outdoor air.

Improved air quality minimizes the risk of illness thus resulting in higher productivity level and fewer lost working days.

- Savings can also be derived from lower medical bills.
- Technical benefits can be in the form of energy savings – better air flow and well balance of air distribution
- Reduced risk of fire since formation of mold and textile fibers can be eliminated
- Higher asset efficiency and longer asset life span since overall system is well maintained.

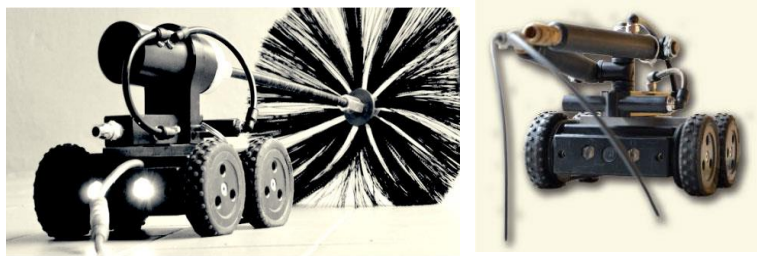
## Duct Cleaning Services & 1MDC RESOURCES

- Therefore, we at ONE MDC RESOURCES (1MDC) would like to introduce our state of the art technology which is Duct Cleaning Services via Robotic Technology.
- 1MDC is well equipped with the latest technology especially on sector of Air-Conditioning Duct Cleaning Services in order to cater with the current market highly demand.
- Although 1MDC is a newly established company, but one of our co-founder, have 7 years experience in Indoor Air Quality and Duct Cleaning Services industry before.
- From his experience, he has managed and secured projects more than 30 buildings in providing Robotic Duct Cleaning Services throughout Malaysia.
- Part of his clients are - Hospital Putrajaya, Hospital Kuala Lumpur, Hospital Kuantan, Faber Towers, Tenaga Nasional Berhad Headquarters, Bangunan Sultan Iskandar Johor Bahru (CIQ Complex), Kapar Energy Ventures, Putrajaya International Convention Centre, Universiti Teknologi Malaysia and others more.
- Approximately, the total value of the project under his management is around 2 Million Ringgit Malaysia.
- He instrumentally managed and run the whole aspect of Administration, Marketing, Business Development and Project Management.
- On top of handling all the management work, he was also on-site executing the project in order to meets the clients' satisfaction with a zero complain.

## Duct Cleaning Services – Method of Statement

- Our method of cleaning is using a robotic technology. Clients are able to view the inspection process and cleaning process via monitor attached at the controller. This controller is wired and connected to a camera, which is attached at front and back of our robot. It will record all the exercise and will be saved to a memory card . This controller is control manually by our trained staff.
- Before perform this exercise, it is advisable to switch OFF the AHU (Air handling Unit) and it is recommended to cover the whole table and all equipment which is below or near the diffusers with plastic. Similarly it would be advisable for the staff working in the affected areas to be temporarily located.
- 
- 1<sup>st</sup> stage is to perform the “before cleaning” inspection in order to verify is there is any obstacles inside the ducting such as damper or etc. The whole process will be recorded. Photos are also taken for our report..
- 2<sup>nd</sup> stage is the cleaning process which is executed using direct contact of brushes or air-whip which will be attached at the top of our robot in order to loosen up the debris or dust accumulated inside the ductwork.
- The brushes or air-whip are activated or rotated by using air compressor. The air pressure from the compressor is also function to blow all the drop loosens dust forward. During cleaning, the whole process will also be recorded.
- At the end of the ductwork or any designated places (depends on situation), we will make an opening at the ductwork in order to attached Vari-Aire (vacuum). Vari-Aire is function to suck all the dust and debris.
- During the cleaning exercise, all diffuser and grills will be removed and cleaned, and will be fix back after complete the whole exercise.
- After the cleaning process was completed, the following step is to sanitize/fogging the entire duct by using Bio-Active Duct & Surface Treatment. This treatment will prevent unwanted microbial growth and it will last for at least a year as testified by the supplier.
- Last stage is to perform another visual inspection for after cleaning to ensure that all works have been performed successfully in accordance to the best practices and at an acceptable standard.
- After the cleaning process was totally completed, all the openings and access doors that were made at the ductwork will be seal and made good. Our team will also ensure that the cleanliness of the working area is well kept.
- All the recording (before cleaning, during cleaning and after cleaning) will then be transform to Video CD and will be submitted to our clients together with Writing Report which will attached all the photos taken during the exercise.

## Duct Cleaning Services – Our Equipment



### MI - 180

A compact Robotic Vehicle with an integrated digital video recorder.

MI-180 is designed for multiple use such as for inspection robot (before and after cleaning) and can also be transformed for cleaning exercise.

The same robotic is designed to carry various devices for cleaning purpose.

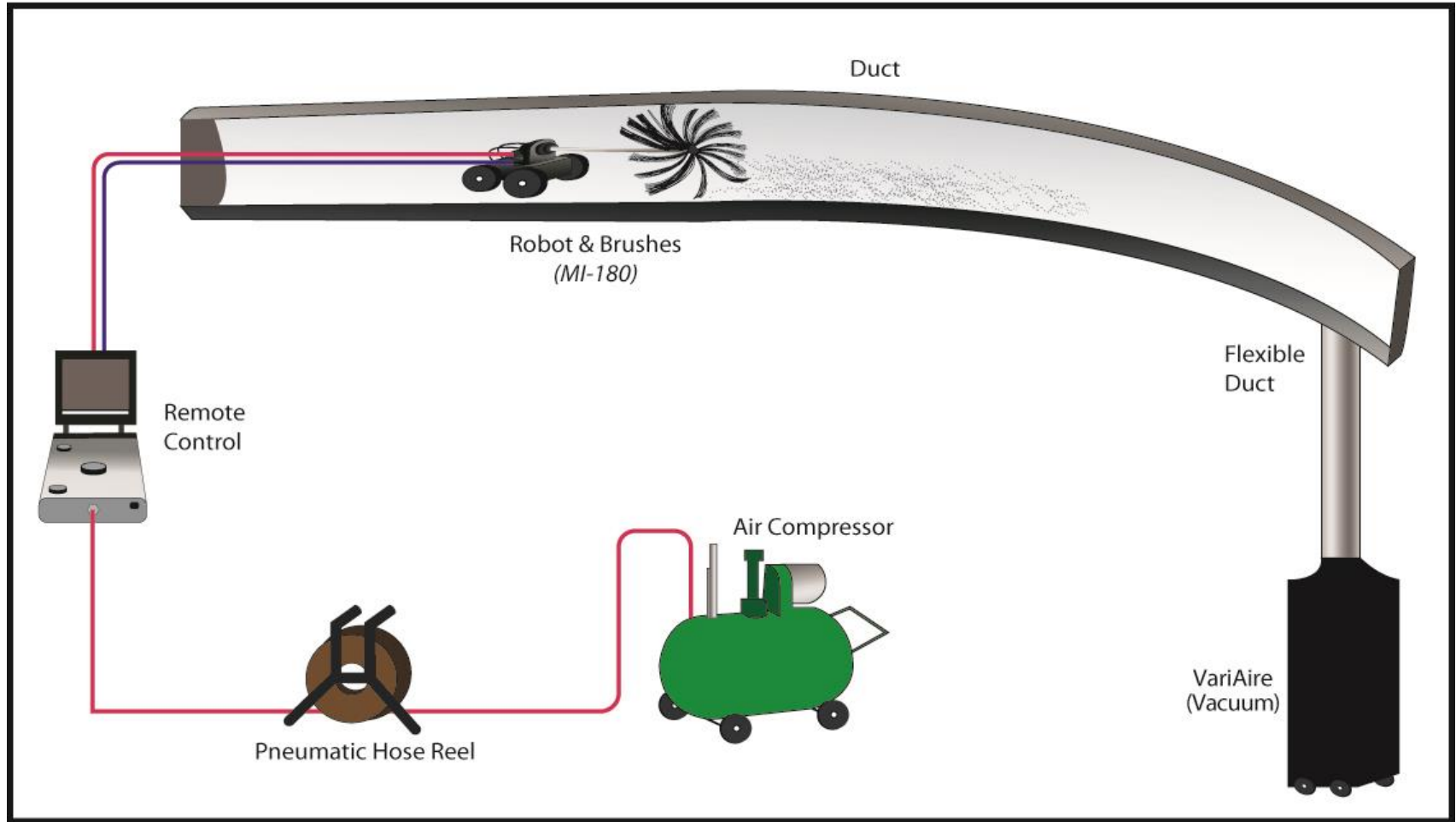


### VariAire (Vacuum)

The VariAire is a HEPA compliant all-in-one negative air, air-scrubber and containment field machine that is powerful enough for commercial duct cleaning.

It's durable and versatile; equally effective from both vertical and horizontal positions.

## Duct Cleaning Services – How We Performed The Cleaning



# Part of Our Clients



**Hospital Tengku Ampuan  
Rahimah, Klang,  
Selangor**

**Bangunan Parlimen,  
Kuala Lumpur**



**Universiti Teknologi  
Malaysia, Skudai,  
Johor**

**RTM Angkasapuri,  
Kuala Lumpur**



**Universiti Utara  
Malaysia, Sintok,  
Kedah**

**Sri Kota Specialist  
Medical Centre, Klang,  
Selangor**



**Menara Raja Laut  
(Menara EON Bank),  
Kuala Lumpur**

**Assunta Specialist  
Hospital, Petaling Jaya,  
Selangor**





# ATTACHMENT

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## Sample Photos

- Before Cleaning
- After Cleaning
- Others

# Before Cleaning



## Before Cleaning



## Before Cleaning



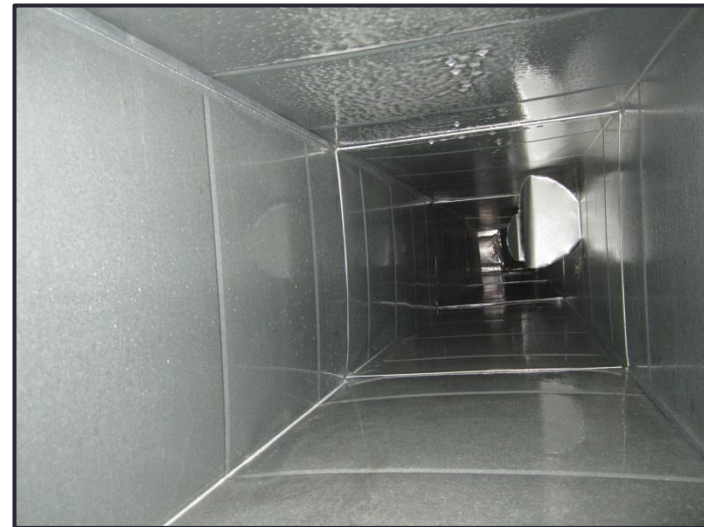
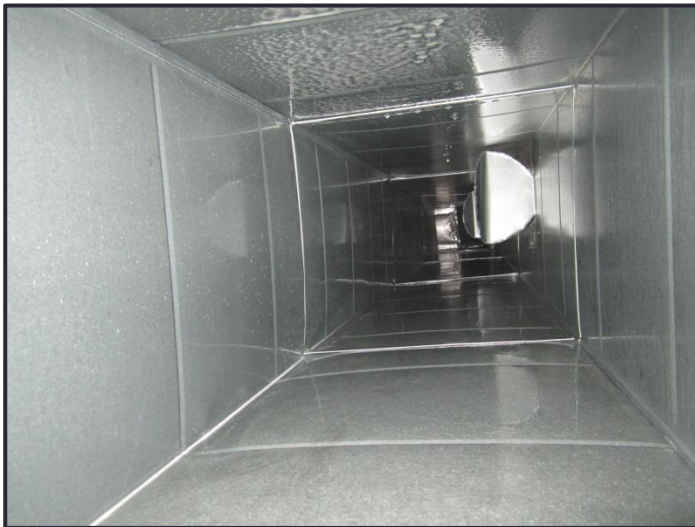
## Before Cleaning



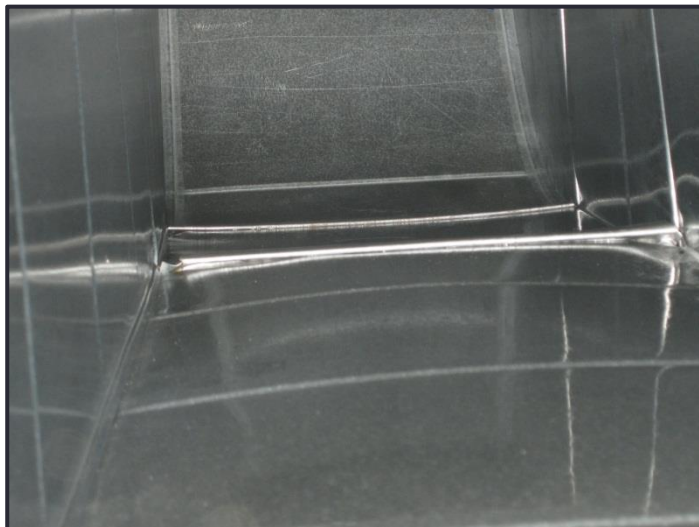
## After Cleaning



## After Cleaning

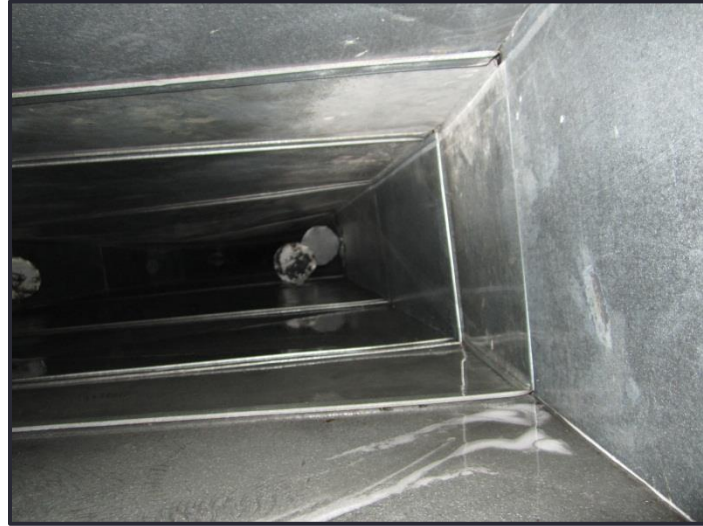
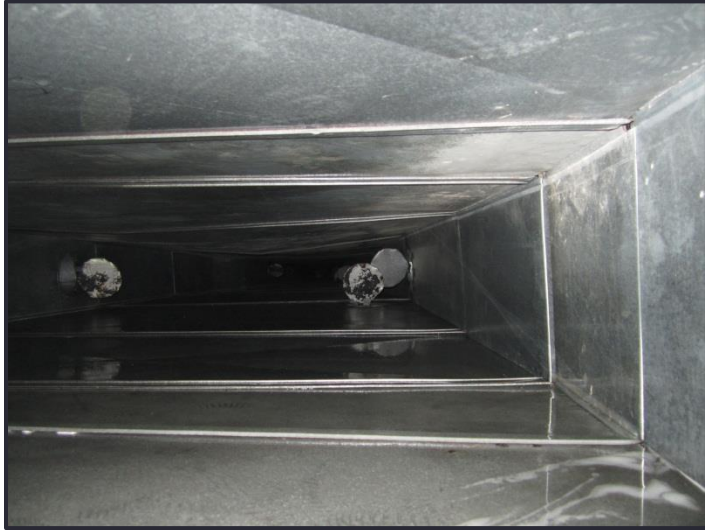


## After Cleaning





## After Cleaning



## Other Photos – Cleaning/Washing Diffusers



## Other Photos – Installing Vari-Aire (Vacuum)

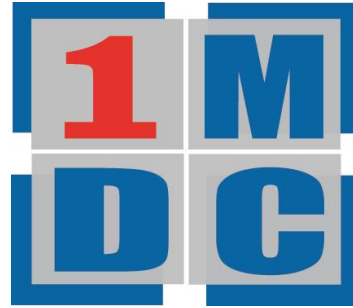


## Other Photos – Sanitizing with Bio-Active Duct and Surface Treatment



# ONE MDC RESOURCES

(SA 0202520-P)



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