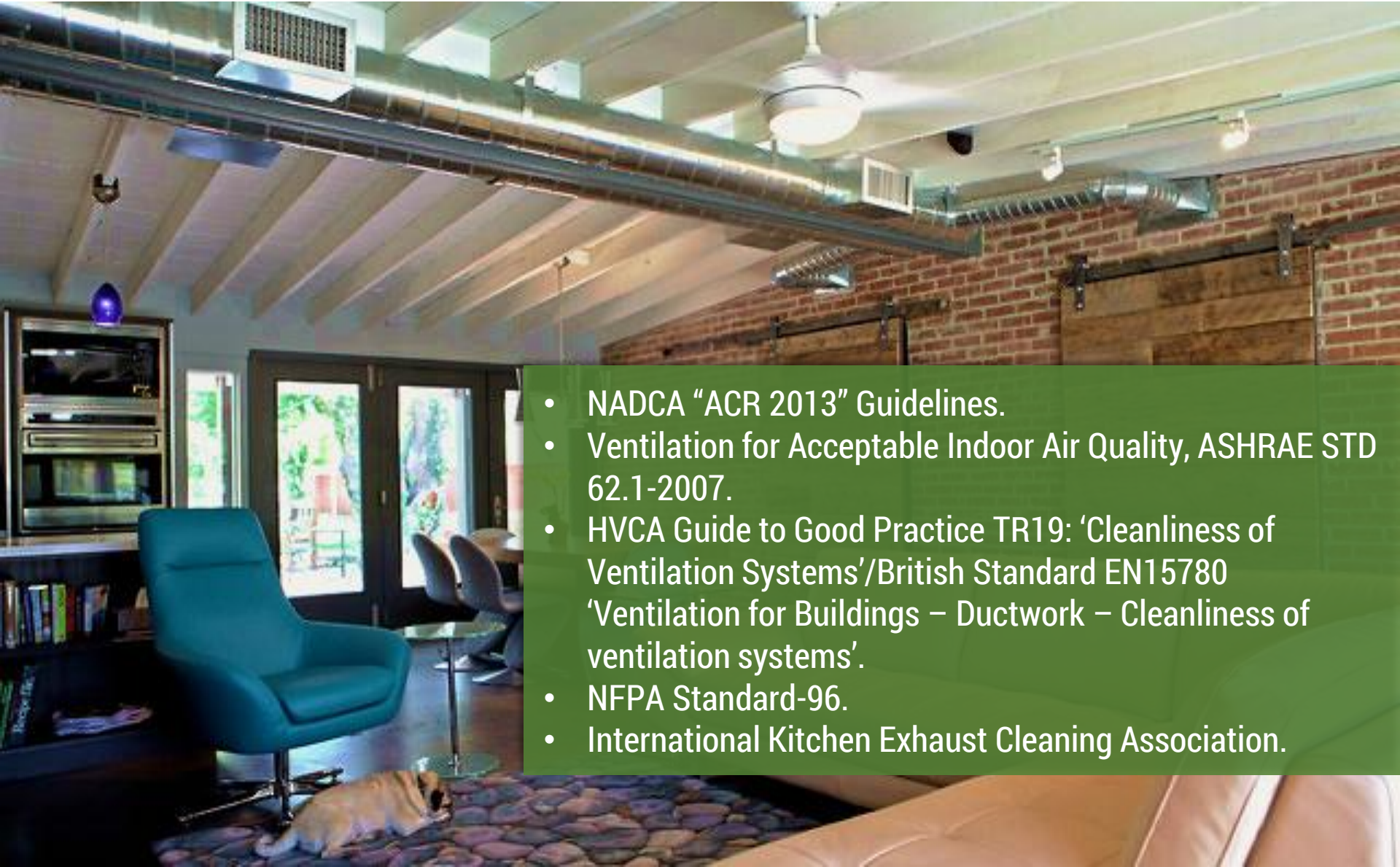


AIR VENTILATION & DUCT CLEANING FOR HVAC SYSTEM





- NADCA “ACR 2013” Guidelines.
- Ventilation for Acceptable Indoor Air Quality, ASHRAE STD 62.1-2007.
- HVCA Guide to Good Practice TR19: ‘Cleanliness of Ventilation Systems’/British Standard EN15780 ‘Ventilation for Buildings – Ductwork – Cleanliness of ventilation systems’.
- NFPA Standard-96.
- International Kitchen Exhaust Cleaning Association.

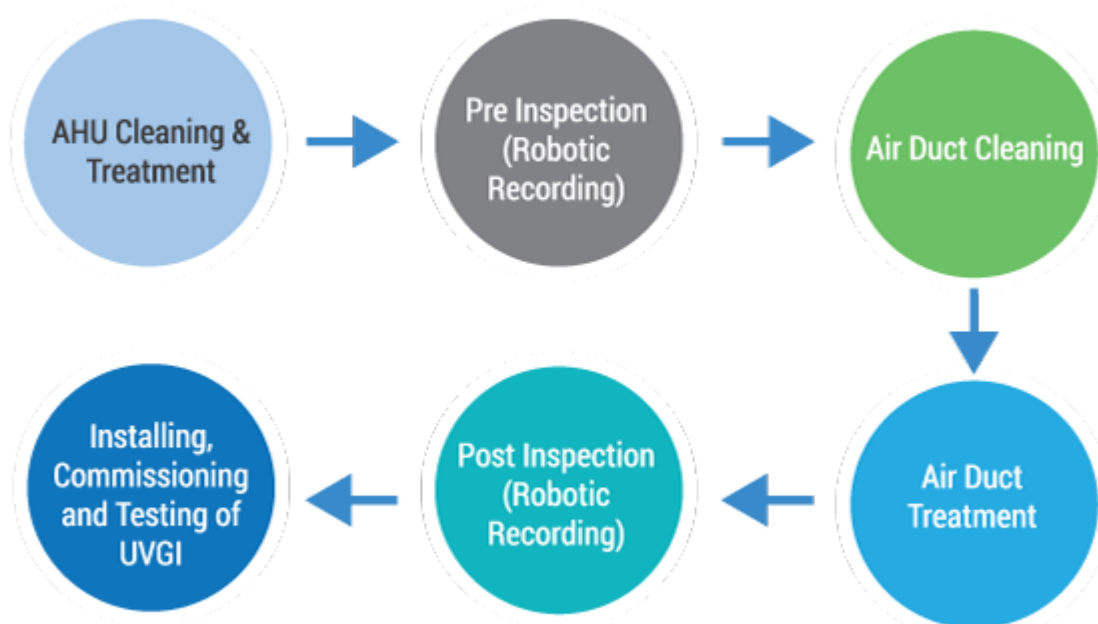


AIR VENTILATION DUCT CLEANING FOR HVAC SYSTEM

SCOPE OF WORK

- Robotic Air Duct Inspection.
- AHU Cleaning & Treatment.
- Air Duct Cleaning & Treatment.
- Installation, Commissioning and testing of UVGI system for continued preventive maintenance management.

WORK PROCESS





GENERAL

1. Operatives to conduct inspection of air duct system
2. Operatives to shut down and tag out HVAC system and isolate power
3. Prepare and cover area of work with proper signage

HVAC SYSTEM

1. Operatives to perform inspection of HVAC unit
2. Operatives to remove filters from HVAC Unit
3. Operatives to perform cleaning of blower fan and surrounding area
4. Operatives to perform coil cleaning, coil treatment and housing cleaning of the entire HVAC unit
5. Operatives to fit back filters after cleaning

AIR DUCT CLEANING

- Operatives to identify location of air duct
- Operatives to cover work area
- Operatives to remove diffusers and install plastic sheet at outlet
- Operatives to perform pre duct inspection
- Operatives to clean and sanitize diffusers
- Operatives to create and install access panels based on air duct system layout plan
- Operatives to perform zoning of air duct for cleaning
- Operatives to fit HEPA filtered air-scrubbing unit at the end of duct.
- Operatives to perform air duct cleaning utilizing pneumatic air and brushing system
- Operatives is to ensure all dirt, dust and other contaminants are transferred into air scrubbing unit
- Operatives to sanitize air duct system-utilizing duct coating technique
- Operatives to perform post air duct inspection upon completion of works
- Operatives to re- install access doors and diffusers.
- Operatives to tag out the HVAC unit and run a performance test.





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EQUIPMENTS AND TOOLS REQUIRED TO PERFORM AIR VENTILATION DUCT CLEANING



No.	Equipment Name
1	Air Duct Inspection Kit
2	Pneumatic Air & Brushing Duct Cleaner
3	HEPA Filtered Air Scrubbing Unit
4	HEPA Filtered Vacuum Cleaner
5	Ultra Low Volume Mist Spraying Kit
7	Complete Set of Air Duct Cleaning Brushes
8	Water Jet including Accessories
9	Nibbler BOSCH
10	Electrical Drill BOSCH
11	Toolbox (Common Tools)
12	Extension Cable (20 Meters)
13	Coil Cleaning Kit



No.	Instruments
1	Battery Drill
2	Swab Sampling Kit
3	Digital Camera
4	Laptop
5	Thermal Imaging Camera
6	LED torch Light

No.	Chemicals
1	Air Duct Sanitizer (Germ-X)
2	Coil Cleaner (Aeris Guard)
3	Coil Treatment (Aeris Guard)

No.	Consumable & PPE
1	Masking & Silver Tape
2	Industrial Garbage Bags
3	Caution Tape
4	Plastic Sheet
5	Industrial Cloth Rags
6	Access Door
7	Mask N95
8	Latex Glove
9	Safety Glove
10	Safety Goggle
11	Safety Helmet
12	Reflective Vest
13	Safety Harness



**Safety
Helmet**



**Eye
Protection**



**Protective
Gloves**



**High Visibility
Clothing**



**Laced Safety
Footwear**

**FULL PERSONAL
PROTECTION
EQUIPMENT (PPE)**

AIR VENTILATION DUCT INSPECTION AND CLEANING PROCESS



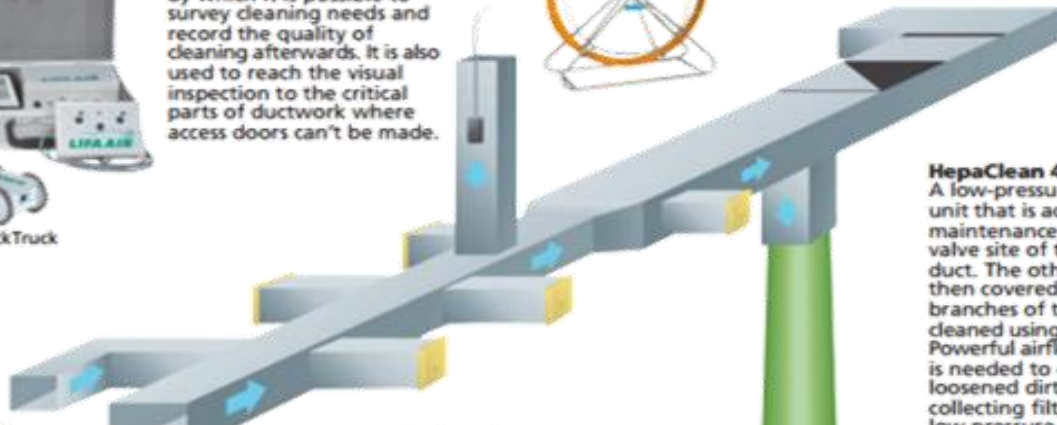
AIR DUCT CLEANING CONCEPT



DuctControl Mini
Remote controlled video/digital camera system using a built-in mini tractor by which it is possible to survey cleaning needs and record the quality of cleaning afterwards. It is also used to reach the visual inspection to the critical parts of ductwork where access doors can't be made.



DuctControl Manual
Light and small hand controlled version for vertical and very small ducts where the use of robot is not viable.



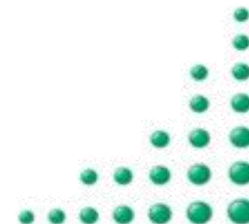
HepaClean 4000
A low-pressure vacuuming unit that is adaptable to the maintenance opening or air valve site of the ventilation duct. The other valves are then covered. First the branches of the duct are cleaned using a rotary brush. Powerful airflow (10–20 ms/s) is needed to carry the loosened dirt into the collecting filter bag of the low pressure vacuum unit. Then the filtered exhaust air is conducted outside the building. A High Efficiency Particulate Air (HEPA) filter is used when there is not a possibility to conduct the air out of the facility



Special Cleaner 20
Electrically driven cleaning machine with a wide range of accessories. Ideal for small ducts.



Hydmaster
Powerful remote controlled hydraulically driven cleaning machine with optional integration of video camera for real time control of cleaning quality. Hydmaster has a wide range of accessories, e.g. Y-gear for rotating 2 brushes in rectangular ducts.



AHU CLEANING & TREATMENT



Cooling Coil

BEFORE

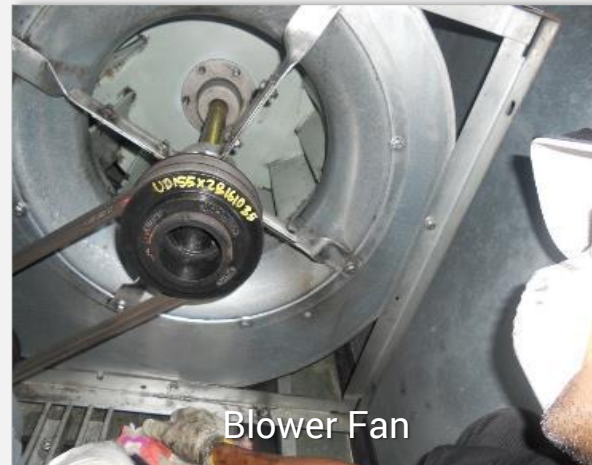


Cooling Coil

AFTER



Blower Fan



Blower Fan



AIR DUCT INSTALLATION



AHU CLEANING & TREATMENT



BEFORE



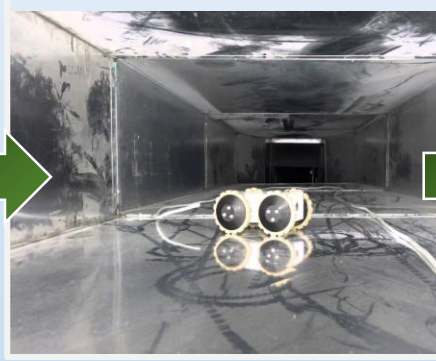
AFTER



WORK IN PROGRESS



**AHU CLEANING & TREATMENT
(COIL TREATMENT)**



**PRE & POST VISUAL INSPECTION
(ROBOTIC DUCT INSPECTION)**



AIR DUCT CLEANING



BRUSHING PROCESS



**AFTER CLEANING &
TREATMENT**



**AIR DUCT SANITIZATION &
TREATMENT**



**PROCESS TO REMOVE DUST &
DIRT FROM INTERNAL
DUCTING**

BENEFIT TO CONDUCT AIR DUCT CLEANING & TREATMENT



Temperatures

Mold doesn't have an allegiance to one specific climate. It prefers temperatures similar to the human body and can grow in both hot and cold areas. Humid and moist areas are the most prone to mold growth.



Optimize Energy Efficiency

A typical duct system (component of the HVAC system) will lose 25 to 40 percent of the heating or cooling energy put out by the HVAC system.

Un-insulated, disconnected, torn, damaged or dead-end ducts are mainly responsible for that loss of energy.

The cleanliness of the coil system in the main HVAC system is another crucial factor to a home's energy efficiency.



Increase System Longevity

The HVAC system is the most expensive mechanical system in your home, and replacing it can cost thousands of dollars and tremendous aggravation.

Annual inspections and regular maintenance can prolong the life of an HVAC system by years.

THANK YOU



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