

SECTION 6 - TECHNOLOGY SAFETY DATA SHEET

TECHNOLOGY SAFETY DATA SHEET
PENTEK, INC.
WallWalker™

SECTION 1: TECHNOLOGY IDENTITY	
Manufacturer's Name and Address: PENTEK, Inc. 1026 Fourth Avenue Corapolis, PA 15108-1659	Emergency Contact: (412) 262-0725
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	Date Prepared:
Other Names: Vertical Surface Scabbling System	Signature of Preparer: Operating Engineers National Hazmat Program 1293 Airport Road, Beaver, WV 25813 phone 304-253-8674, fax 304-253-7758 Under cooperative agreement DE-FC21-95 MC 32260

SECTION 2: PROCESS DESCRIPTION

The WallWalker™ system consists of four major subsystems: a motion control subsystem, a heavy-duty scabber work head, an ultra-high performance vacuum system (VAC-PAC®), and a monorail mounting system.

The motion control subsystem consists of a system controller, operating software, DC brushless servo motors, and the servo motor controllers. The main components of the motion control subsystem (operator control panel) are the system controller and the software. An IBM ThinkPad laptop computer and a Windows 95 program are used for the motion control subsystem. The operating software allows the user to control the work head's position and to define the path of movement. The software provides on-line help for the operator. The software also provides extensive error trapping to ensure that the operator does not move the head to an inaccessible or unsafe area. In addition to being moved along a predefined path, the work head can be steered manually using an up-down-left-right movement.

The scabber work head subsystem contains three single-piston scabblers mounted on an independent suspension. The scabblers are tungsten-carbide with a 2 ¼-inch bit diameter. The estimated production rate for the work head is 150 square feet per hour at 1/16-inch. The three scabblers can be rotated around the assembly's central axis to provide an even surface profile.

The WallWalker™ system incorporates a vacuum flow design which provides for control of dust, debris, and airborne contamination. The vacuum system used with WallWalker™ was the Pentek VAC-PAC®. The VAC-PAC® uses a two stage positive filtration system. The first stage utilizes roughing filters with a filter efficiency of 95% at 1 micron and the second stage utilizes a high efficiency particulate air (HEPA) filter with an efficiency of 99.97% at 0.3 microns. The VAC-PAC® features automatic self-cleaning of the first stage filters using reverse flow pulses of high pressure air and high recovery pneumatic eductors to produce high performance vacuum flow. The VAC-PAC® uses a controlled seal drum fill system which allows the waste drum to be filled, sealed, removed, and replaced under controlled vacuum conditions. The written procedure for a full-drum changeout is located on the side of the VAC-PAC®. The vacuum system is mounted on a powered lift mechanism and can accommodate 23-, 52-, or 55-gallon waste drums.

The monorail mounting subsystem is designed to reposition the WallWalker™'s motors along the wall. The main component of the monorail system is the two positioning trolleys (one for the right and one for the left motor). The motors and cable reeving mechanism are mounted to an aluminum swivel plate that is suspended from the trolley. The trolleys are capable of withstanding the large tension forces that are present at the motors during WallWalker™ operation. The trolleys are

SECTION 2: PROCESS DESCRIPTION

moved by hand along the monorail to reposition the WallWalker™. The positioning trolleys contain a solenoid-controlled brake pin on each trolley to ensure that it remains fixed in position during operation. The brake pins are controlled using an AC voltage and can be engaged and disengaged using a toggle switch located on the scabbling head. The positioning trolleys also incorporate proximity switches to ensure that the brake pin is fully engaged. The proximity switch is mounted opposite of the brake pin where if the pin is engaged, the output of the proximity switch energizes an indicator light.

SECTION 3: PROCESS DIAGRAMS

Process diagram not available.

SECTION 4: CONTAMINANTS AND MEDIA

The technology has the potential to cause coating and concrete dust and associated contaminants to become airborne. These will need to be identified by the site characterization prior to the beginning of the job. A monitoring plan will need to be developed on a site-by-site job-by-job basis.

SECTION 5: ASSOCIATED SAFETY HAZARDS

Probability of Occurrence of Hazard:

- 1 Hazard may be present but not expected over background level
- 2 Some level of hazard above background level known to be present
- 3 High hazard potential
- 4 Potential for imminent danger to life and health

A. ELECTRICAL (LOCKOUT/TAGOUT)

RISK RATING: 2

The WallWalker™ system has the potential to present electrical hazards. Assure proper grounding and the use of ground fault circuit interrupters on all equipment. Compliance with applicable electrical standards and codes and lockout/tagout procedures must be followed to assure the safety of personnel.

B. FIRE AND EXPLOSION

RISK RATING: 1

Normal fire and explosion hazards in association with electrical powered equipment. The equipment is not intrinsically safe and could not be used in a potentially explosive atmosphere. Additionally, sparking may result from the scabbling process.

C. CONFINED SPACE ENTRY

RISK RATING: N/A

Not part of this technology unless the specific location where the WallWalker™ system is being used is a confined space. In this case, confined space procedures

SECTION 5: ASSOCIATED SAFETY HAZARDS	
would need to be followed.	
D. MECHANICAL HAZARDS	RISK RATING: 3
The WallWalker™ has moving parts which may cause injury. The areas on the back of the scabblers for access to the scabbling head, while covered, are of particular concern. The area needs to be guarded and labeled as a potential hazard.	
E. PRESSURE HAZARDS	RISK RATING: 2
The air lines and high pressure air are potential hazards and may cause severe injury if a line or fitting were to fail, rupture, or become dislodged.	
F. TRIPPING AND FALLING	RISK RATING: 3
The air lines, electrical lines, vacuum hoses, and computer lines present tripping hazards in the area where they are being used.	
G. LADDERS AND PLATFORMS	RISK RATING: 3
When attaching the system to the wall, it is necessary to work at a height. This presents the potential for an object falling from above to injure workers at ground level. Proper precautions must be taken. Additionally, proper scaffolding and/or elevated work platform safety must be used. All workers in the area need to wear hard hats.	
H. MOVING VEHICLES	RISK RATING: 2
The presence of multiple pieces of mobile equipment (which may be needed to unload and load the technology) in relationship to a small area of operation may pose a significant danger. Sufficient warning devices such as horns, bells, lights, and back up alarms should be utilized. Personnel should be trained to work with and around moving equipment.	
I. BURIED UTILITIES, DRUMS, AND TANKS	RISK RATING: N/A
Not part of this technology.	
J. PROTRUDING OBJECTS	RISK RATING: N/A
Not part of this technology.	
K. GAS CYLINDERS	RISK RATING: N/A
Not part of this technology.	
L. TRENCHING AND EXCAVATIONS	RISK RATING: N/A
Not part of this technology.	

SECTION 5: ASSOCIATED SAFETY HAZARDS	
M. OVERHEAD LIFTS	RISK RATING: 2
Unloading and loading of technology may require overhead lifts or the use of a forklift. Proper precautions indicated.	
N. OVERHEAD HAZARDS	RISK RATING: 2
Would only be present if a crane or forklift were required to unload or load equipment.	

SECTION 6: ASSOCIATED HEALTH HAZARDS	
A. INHALATION HAZARD	RISK RATING: 2
Technology has the potential to produce dust from the material the wall is constructed of, the coating, and related wall contamination. Specific hazards will be identified from the site characterization. Evaluation of total dust and/or respirable dust generated should be conducted.	
B. SKIN ABSORPTION	RISK RATING: 1
This would be dependent on the contaminants at the site and would be identified by the site characterization.	
C. HEAT STRESS	RISK RATING: 1-4
The need to wear PPE inside the work area has the potential to increase the heat stress placed on the worker. Ambient conditions correlated with PPE, work rates, etc. must be considered.	
D. NOISE	RISK RATING: 3
Noise exposure is a potential exposure hazard during the operation of the WallWalker™. Noise monitoring has shown values in excess of the OSHA “action level” and PEL. In addition to feasible engineering and administrative controls, adequate hearing protection must be incorporated, as appropriate, during operation. The operator control station should be located as far as possible from the scabbling operation.	
E. NON-IONIZING RADIATION	RISK RATING: N/A
Not part of this technology.	
F. IONIZING RADIATION	RISK RATING: 1-4
Not part of this technology, but may be associated with the surface being decontaminated.	
G. COLD STRESS	RISK RATING: 1
Technology does not produce a hazard, but ambient conditions need to be considered.	

SECTION 6: ASSOCIATED HEALTH HAZARDS (CONTINUED)	
H. ERGONOMIC HAZARDS	RISK RATING: 4
<p>During setup and tear down there is the potential for sprain/strain to the back, shoulders, arms, and legs from lifting, bending, moving the cart with the scabbling head on it, and attaching the positioning system to the vertical surface to be scabbled.</p> <p>Attaching the positioning system to the vertical surface requires the worker to lift the reeving motor drive assembly above the head. The assembly weighs approximately 50 pounds. This places a great deal of stress on the back, shoulders, neck, and arms.</p> <p>Moving the cart with the scabbling head on it has the potential for sprain/strain to the back, shoulders, and arms from bending to push the cart. The scabbling head weighs approximately 500 pounds.</p>	
I. OTHER	RISK RATING: N/A
None noted.	

SECTION 7: PHASE ANALYSIS	
A. CONSTRUCTION/START-UP	
The set-up/start-up phase presents several hazards including struck-by/caught between hazards, fall from above hazards, working at heights hazards, pinch points, slips/trips/falls, muscular/back injury, and electrical hazards.	
B. OPERATION	
The operational phase presents several hazards including exposure to contaminant, noise hazards, hazards associated with the air lines, muscular/back injury, electrical hazards, fall from above hazards, and pinch points.	
C. MAINTENANCE	
The maintenance phase presents several hazards including pinch points, slips/trips/falls, struck-by/caught between, muscular/back injury, electrical hazards, exposure to contaminants, and accidental activation of moving parts.	
D. DECOMMISSIONING	
The decommissioning phase presents several hazards including exposure to the contaminants, pinch points, slips/trips/falls, and muscular/back injury.	

SECTION 8: HEALTH AND SAFETY PLAN REQUIRED ELEMENTS**A. AIR MONITORING**

Operation of the WallWalker™ has the potential to generate dust. An air monitoring plan will need to be developed for total and respirable dust, contaminants of the coating being removed, and contaminants and constituents of the substrate.

Noise generated during operation of the WallWalker™ is a potential exposure hazard. A noise monitoring plan is essential.

B. WORKER TRAINING

Training that would apply in this case may include but not be limited to: HAZWOPER (Hazardous Waste Operations and Emergency Response), HAZCOM (Hazard Communication), Respiratory Protection, Hearing Conservation, Electrical Safety, Ergonomics (proper lifting, bending, stooping, kneeling), Heat Stress (learning to recognize signs and symptoms), Personal Protective Equipment, Emergency Response /Bloodborne Pathogens, Lockout/Tagout, Hand Signal Communication, Construction Safety (OSHA 500), and/or General Industry Safety (OSHA 501). Scaffolding/elevated platform safety is required, as appropriate.

C. EMERGENCY RESPONSE

Emergency response planning for a site needs to assure adequate coverage for hazards described in the TSDS. Having at least one worker per shift trained in CPR and first aid is recommended.

D. MEDICAL SURVEILLANCE

Evaluation of personnel's general health with emphasis on the back and cardiovascular/respiratory system. Medical surveillance as required by the OSHA standards must be conducted. Initial and annual audiograms may be indicated.

E. INFORMATIONAL PROGRAM

Workers must be trained in specific operation of equipment before use.

SECTION 9: COMMENTS AND SPECIAL CONSIDERATIONS

Only personnel who have been adequately trained in the operation of the WallWalker™ as well as associated hazards should be permitted to operate the system.