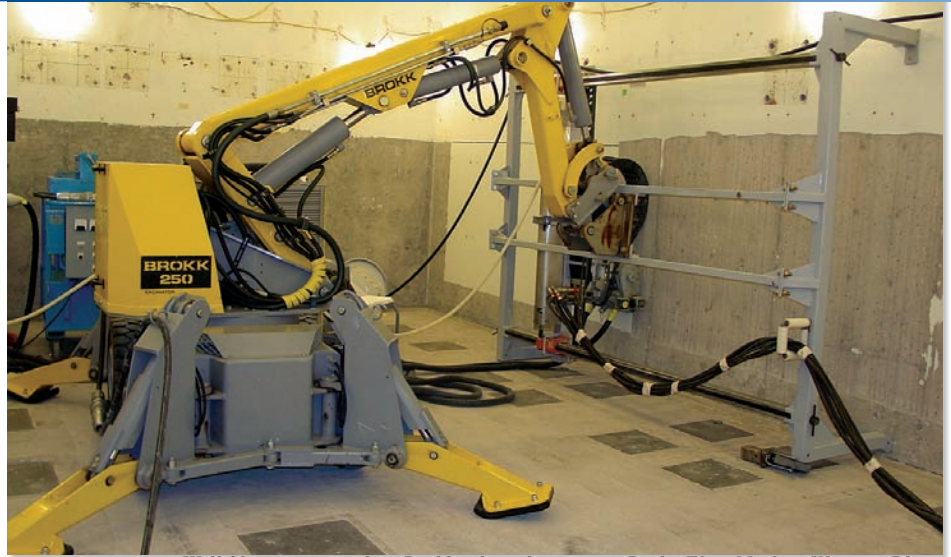


Diamond Shaving of Contaminated Concrete Surfaces



Wall Shaver mounted on Brokk robotic hammer at Rocky Flats Nuclear Weapons Plant.

Decommissioning and decontamination of existing facilities presents technological challenges. One major challenge is the removal of surface contamination from concrete floors, walls and ceilings while eliminating the spread of contamination and volumetric reduction of the waste stream. The recent innovations of the Diamond Floor Shaver and Diamond Wall Shaver have already proven their unmatched performance as the superior method.

The floor shaver is a self-propelled, walk behind machine that literally shaves the contaminated concrete surface to specified depths. This is accomplished by using a patented system of 100 dry cutting diamond blades with offset diamond segments that interlock to provide complete shaving of the concrete surface. Grooves are eliminated, which allows for a direct frisk reading to analyze results.

When attached to an appropriate size vacuum, the dust produced is 100% contained. Dust is collected in drums ready for disposition and disposal. The waste produced in shaving 7,500 square feet at 1/8 inch thickness would fill a single 55 gallon drum. Production is dependent on depth of shaving but averages 100 square feet per hour.

The wall shaver uses the same patented diamond drum and blades as the floor shaver. It is hydraulically driven and can be deployed using a robotic arm or other Bluegrass engineered solutions which allow complete remote operation.

Numerous small projects have been successfully completed with this shaver technology. Large scale deployment came in 2003. Bluegrass, in conjunction with Bartlett Services, used the diamond shavers to support decontamination activities for the closing of the Rocky Flats Nuclear Weapons Plant. As many as six floor shavers and one wall shaver were deployed in buildings B371 and B374. These buildings had up to one half-inch of fixed plutonium and beryllium contamination.

Hundreds of thousands of square feet of floors and walls were shaved to depths from zero to one half inch. Decontamination efforts were so successful the balance of the buildings could be demolished using conventional methods. The shavers helped keep the project on schedule while the vacuum system eliminated the potential for contaminants becoming airborne.

Benefits and Features

- Shaved surface is smooth enough to get immediate direct frisk readings.
- Shaves contaminated concrete, including embedded metals quickly and easily.
- Incremental removal depth of 1mm - 10mm per individual pass
- Accuracy to within 0.1mm shaving depth is achieved through depth control device.
- Blade life of up to 20,000 square feet at 1/8" (3.0mm) removal
- Up to 50% less volume of waste than other methods
- Saves time and disposal costs by eliminating the need for reworking and multiple passes
- Self-propelled, walk-behind, ergonomically friendly
- Electrically powered
- Minimal vibration
- 250mm shaving drum containing 100 interlocking diamond impregnated blades

Rancho Seco Decommissioning Project

“Use of the Marcryst Diamond Floor Shaver for decontamination of radioactive contamination from concrete floors has begun at Rancho Seco. The Shaver was originally selected due to its proven ability to remove between 1/8” to 1/4” of the contaminated concrete surface per pass at a production rate of approximately 100 ft²/hour, its ease of operation, as the shaver is self-propelled and can be operated and easily moved by a single worker, and because the Shaver generates a very dense waste product which results in a low volume of produced waste. However, most importantly, the Shaver leaves a smooth surface that is acceptable for final site radiological surveys. The resulting smooth surface helps to ensure that surface beta scans and direct measurements, supporting final site survey, are performed efficiently, effectively and reliably.”

Michael Snyder
Principal Radiological Engineer



Diamond Floor Shaver Technical Data

Power specification

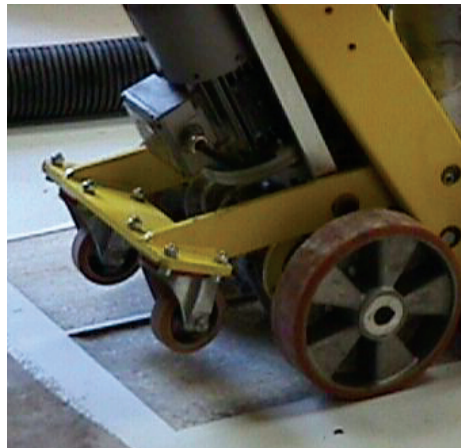
Output	8.5 Kw
Power supply	480 v, 3 phase
Power consumption	17 Amp

Frequency

Advance drive motor	7.5 Kw/ 2850 Rpm
Advance drive speed (infinitely variable)	0-25 ft/ min

Dimensions

Diamond Drum	Shaving width	10 inches
	Maximum cutting depth	0.5 inches
	Blade diameter	6.0 inches
Machine	Width	19.0 inches
	Length	46.0 inches
	Height	40.0 inches
Weight	Total gross weight	330 Lbs



Left: Floor shaver removes coated concrete surface during technical demonstration at Argonne National Lab. Below: Floor shaver removes contaminated concrete for ease of surveying/monitoring during decommissioning of Building 371 at Rocky Flats Nuclear Weapons Plant.

