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A New Suction and Recycling System Enabling Steel Abrasives to Be Used In The Field

W Abrasives®

Winoa
528 Avenue de Savoie
38570 Le Cheylas, France
Tel. +33.4.76 92 91 57
Fax +33.4.76 92 92 49
E-mail: constance.morel@winoagroup.com
www.winoagroup.com
www.wabrasives.com

A New Suction and Recycling System Enabling Steel Abrasives to Be Used In The Field

For many years, on-site grit blasting of large metallic structures has been carried out using expendable abrasives such as coal slag, copper slag or garnet. This is due to the fact that it has been difficult, often impossible, to reclaim and reuse such abrasives.

In these circumstances, it has been sensible to use the cheapest abrasive available, even though it may not be the most effective in terms of speed of blasting and quality of surface finish.

Following evolutions in environmental issues and regulations, encapsulation of large steel structures has become compulsory in most countries enabling the use of recyclable steel abrasives, considered as the best abrasive for creating good adhesion profile prior to painting and coating.

Winoa Group, formerly Wheelabrator Allevard, world leading manufacturer and supplier of high carbon steel abrasives has developed Phenics, a mobile suction and recycling system in order to expand steel abrasive blasting operations to large steel structures.

2 versions are available allowing continuous blasting with 1-4 operators up to 300m suction distance. (Figure 1)

The compact 'Combi' unit on which both the suction and recycling equipments are enclosed in a single unit and the 'XL' unit, used for larger projects, are composed of two separate units of suction and recycling.

On the Combi unit, the used abrasive is drawn into a 3-stage air separation system incorporating a scalping drum to remove coarse contamination, an air separator, and finally a magnetic separator to recover any abrasive particles removed by the air separator.

On the XL version, two air-separation systems are used to cope with the greater volume of abrasive, dust and other waste materials being processed.

Recently, Winoa has developed a modular unit called Phenics Air, enabling access to complicated worksites.

Phenics Air is adapted to be transported by helicopter

Penstock refurbishment project

Figure 1

This new unit is composed of four modules, which can be assembled and dismantled easily. Phenics Air is adapted to be transported by helicopter, for jobs with no road access or at high altitude.

Phenics Air is used for the penstock refurbishment project in the Pyrenees Mountains located at a height of 1800 meters.

High benefits for customers

Thanks to the Phenics system, steel abrasive blasting has become possible offering to end users the best quality in term of surface preparation (by using a

premium Steel grit) at much lower costs (typically 30% of the total cost of the blasting operation).

These savings are achieved through faster blasting, reduced overall abrasive costs, and a very significant reduction in the amount of waste product to be disposed of.

Comparative Data	SLAG	GARNET	STEEL GRIT
Average Efficiency	7m²/h	8m²/h	12m²/h
Lifetime/nr of cycles	1	Max 3	Up to 200
Consumption (SA 2,5)	40kg/m²	20kg/m²	1 kg/m²

Because most waste contains heavy metals such as lead, cost of waste disposal is really expensive and has increased continuously during the last few years. Waste disposal reduction is then a key point for most customers. Although density of steel abrasive is significantly higher, overall weight of waste has been significantly reduced.

Environmental, health and safety issues

The working conditions of operators are improved dramatically due to a result of lower dust levels and better visibility for operators is an added bonus. Phenics is suitable for most site-blasting projects, including enclosed areas such as large tanks, and a number of projects have been successfully completed across Europe.

The 3-stage filtration system leads to a dust removal efficiency of 99.9% with both versions leading to low air emissions.
The weight of steel abrasive required to blast a given area is typically 5% of the weight of copper slag leading to significant reduction of waste volumes.

Voice of a customer

One of the regular users of Phenics is the French industrial painting company, Battaglino.

"The solution proposed by Phenics enabled the use of steel grit blasting and recycling, which was previously reserved for workshops, for on-site works," says Guillaume Perrin, a Director of Battaglino.

"We achieved a considerable decrease in the amount of waste by recycling steel grit, which is a real environmental advantage. The use of Phenics also helped facilitate the organization at the worksite, through continuous suction of dust, paint flakes and grit, thus preventing the accumulation of materials on the scaffolding. In addition to these advantages, the quality of the surface profile obtained is better, improving the anticorrosion coating adhesion."

Unique package of Steel abrasive, equipment and technical assistance

Phenics offers customer a full package to facilitate their operations, consisting of equipment for hire or sales, technical assistance customized according to customer needs, and high quality steel abrasives specifically designed for air-blasting operations.

Equipments for hire or sales

Technical Assistance

Steel Abrasives

For Information:
Winoa
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Tel. +33.476.92 91 57, Fax +33.476.92 92 49
E-mail: zerrin.koltukcuoglu@winoagroup.com
www.winoagroup.com, www.wabrasives.com