

Compact Recycling

With environmentally compatible **Rubble Master Compact Recyclers**, even smaller amounts of concrete, asphalt and mineral-based building material can be processed efficiently and inexpensively.

Large-scale demolition sites are now part of normal day-to-day business in the construction industry. The ever increasing amounts of waste building materials call for an efficient system of reuse directly on the work site in order to avoid unnecessary transport of materials. Conditions at inner-city job sites in particular are scarcely comparable with those at a remote gravel pit or in a stone quarry, where noise pollution is not a major concern. Faced with advancing mechanisation and increasing road traffic, law-makers are also trying to bring the problem of emissions under control by continuous stipulation of lower limits.

Compact recycling

Compact recycling means sorting the materials to be processed into grade right on the job site. Sorted, high quality recycled building materials can be used in their entirety directly at the work site or at a nearby building site. "The use of recycled aggregate can save money for local governments and other purchasers, create additional business opportunities, save energy when recycling is done on site, conserve diminishing resources of urban aggregates, and help local governments meet environmental goals", points out **Ajay Batra, Managing Director, BHP Infrastructure Pvt. Ltd, Faridabad.**

Cities like Mumbai, Kolkatta, Chennai, Delhi, Hyderabad and Bangalore have reusable construction and demolition materials produced through road demolitions, building demolition and rock excavations. With the extent of infrastructural reconstruction that is required to convert these cities into modern cities a very large quantity of C&D waste will be generated.

As per the California Integrated Waste Management Board reuse and recycling of C&D materials is one component of a larger holistic practice called sustainable or green building construction. The efficient use of resources is a fundamental



On-site mobile recycling can cut transport and create small cycles.

tenet of green building construction. This means reducing, reusing, and recycling most if not all materials that remain after a construction or renovation project. At the end of a building's life, demolition generates large amounts of materials that can be reused or recycled.

Ideal for road construction

A roadway is built in several layers: pavement, base, and sometimes subbase. The pavement is the surface layer and is made of PCC or AC. The base layer supports the pavement and is made of aggregate base (AB). The subbase layer supports the base and is made of aggregate subbase (ASB). According to Batra recycled aggregate can be used in paved roads as aggregate base, aggregate subbase, in gravel roads as surfacing, as base for building foundations and as fill for utility trenches.

The increasing amount of leftover building materials requires an efficient system for recycling directly on-site to avoid unnecessary transport runs.

“With the Rubble Master Compact Recycling System there are substantial savings made in transport and tipping costs, as well as in the procurement of new materials.”



– Ajay Batra,
Managing Director,
BHP Infrastructure
Pvt. Ltd, Faridabad

Rubble Master

HMHEngineering-Consulting-Trading GmbH, headquartered in Linz, Upper Austria, has been developing and marketing mobile Rubble Master Compact Recyclers since 1991. These machines are highly efficient compact units used for both the conventional processing of stone and earth and for the economical re-use of construction waste such as rubble, asphalt, concrete and broken roads. Rubble Master Compact Recycling machines have now been launched in India by BHP Infrastructure.

Rubblemaster introduced the concept of compact recycling in 1993 and has been devoted to setting standards in environmentally acceptable recycling. Here too, high efficiency and economy are of the essence – not forgetting machines that are already extremely environment friendly as they can be used on the job site, saving transport as a result. These principles come into effect already in the development stage: the environment-friendly crusher drive system uses low-emission, certified diesel engines. Hydraulics are used only for

secondary functions and are switched on only when the crusher moves. The small tank volume has a positive effect on maintenance costs and, in the event of a malfunction, environmental impact is kept low.

With environmentally compatible Rubble Master Compact Recyclers, even smaller amounts of concrete, asphalt and mineral-based building material can be processed efficiently and inexpensively. It also makes it much easier to control the flow of materials. This in turn reinforces the service character of the building contractor; not only can he use this service in his own work, he can also offer it to local authorities. In every situation there are substantial savings made in transport and tipping costs, as well as in the procurement of new materials, points out Batra. Plus, thanks to their compact dimensions and low transport weight, they can be put to work on even the most inaccessible inner city building sites.

“Thanks to its low noise levels the first Rubble Master RM60 was also ideal for use in residential areas; the Rubble Master

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TS3600 Kiesgrube: Fully remote-control functions guarantee safe crushing.

Enviro concept for minimum consumption and extremely low emissions was developed to comply with increasingly stringent guidelines. From the outside you can see the special cover over the crusher to suppress crushing noise. Selected materials have also been fitted to the crusher inlet to reduce noise. Noise reduction is enhanced even further by an optimised exhaust system. Inside the machine, a finely tuned low-emission diesel engine shows how important environmental impact is for Rubble Master machines. An intelligent

dust suppression system is fitted at several points to cut down on airborne particles – both in the crusher and on the discharge conveyor belt,” explains Batra.

Benefits

According to Batra, customers benefit from an ingenious machine concept for maximum performance with low consumption and future-oriented environmental acceptability. This is possible due to an optimised crusher drive concept with diesel engines certified as low-

emission. The perfectly matched Deutz engine stands out through high efficiency, saving at least 10 per cent in the process. Vibro channel and discharge belts are operated electrically using an integrated three-phase generator which also powers all the external equipment, even on remote job sites where no electricity is available.

“Fully remote-control functions guarantee safe crushing,” he says. Rubble Master crushers really do require only the one operator: it even takes less than 10 minutes to unload the machine. The operator driving the loader is able to control the crusher functions and movements from the loader cab - incidentally the safest place to observe the crusher in operation. All operational crusher functions are controlled using the radio control unit: automation, conveyor speed, crusher inlet and Release System and, of course, the crawler gear.

Traffic pollution

According to him, transport services are needed most in the excavation and shell building phases of construction work. Clearly, therefore, it is necessary to considerably reduce this traffic by re-using waste material that accumulates directly on the work site. This in turn reduces costly kilometres of transport and traffic hold-ups when driving to central processing sites (which are becoming

WHY RE-USE

- The recycling of building materials is the logical consequence of an approach which is based on sustainability and cyclic processes. Recycling helps save resources and reduce waste and traffic.
- The re-use of building materials is in compliance with the law
- The acceptance charge for waste building materials is lower than the contribution for the removal of hazardous waste which dates back to past activities
- The re-use of waste building materials saves valuable tipping space
- The utilisation of recycled building materials has a positive impact on the limited natural original sources of raw materials
- The possible applications of recycled building materials are varied; they range from verge filling to agricultural and forestry path making, sports facilities and high-quality civil engineering works
- Today recycled building materials are equal to natural building materials and are subjected to continuous checks as grade-certified quality materials
- Recycled mineral material is in many respects even superior and offers various additional benefits (e.g. better binding strength)
- The direct positive impact on the environment is also worthy of note, e.g. countless kilometres of transport are no longer necessary
- Recycling contributes towards making our living space worth living in – also for generations to come

increasingly difficult to reach as a result of the increase in traffic). Recycling - assuming that the demolished material is processed on site - can reduce diesel consumption by more than half due to fewer journeys. The figures for sulphur dioxide, carbon dioxide, hydrocarbons, nitrogen oxides and lead emissions also decrease proportionately.

Corporate Calculations

To summarise it can be seen that on-site mobile recycling can cut transport and create small cycles. With the savings in transport kilometres, hold-up times and operators alone there is a significant cost benefit over centralised structures. These savings are clear to see and become effective immediately.

Rubble Master Compact Recyclers have a fast amortisation period in the company - through the low investment and excellent cost efficiency. Thanks to the flexibility and versatility of the machines, a broad spectrum of waste building materials can be re-used inexpensively - in your own company and also in contract crushing for other building contractors or as a service for local authorities. This means existing personnel and equipment can be employed more efficiently and fixed costs can be covered. With the Rubble Master Compact Recycling System, therefore, you can reduce the costs of storage, disposal and procurement and thus improve the company's overall cost structure.



Rubble Master ensures enhanced level of efficiency alongwith other advantages.

Economic issues

Furthermore the high costs caused by heavy goods vehicles (road wear) and the lasting negative impact on the environment through harmful emissions have to be considered in the full economical picture.

Protecting resources

Against this background, a reduction in transport while protecting resources at the same time - as can be achieved with mobile recycling - is an extremely significant factor. This way, waste building

material (which would otherwise be tipped and thus be lost as a valuable raw material) can be re-used. At the same time, new material (gravel, sand etc.) would be needed. People have generally become aware of the shortage of many raw materials and an economical approach to their use has become a matter of course. However, in the building industry it can be seen that the base materials are in shorter supply. The majority of the classic construction/building materials - all metal and mineral building materials - belong to non-renewable resources. The aim must be to keep these in material cycles, too.

Minimising waste

The inversion of the argument is also quite clear. If more material is re-used, less old material has to be stored. Storing materials is the equivalent of removing them from the material cycle and is therefore to be avoided - also by law. This saves valuable storage space which can be used for other purposes. This particularly applies to the production of high-quality recycled building materials - as in the case of Rubble Master Compact Recyclers - with the best case scenario being that of re-using the entire building material waste at the place where it originates.

“Our wish is to comply with these very requirements, which is why we have set ourselves the target of producing the machine with the lowest emissions for the market”, sums up Batra. **EI**



Rubble Master at work.