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# Trends in the recycling of residual concrete

The effects of the financial crisis are now also being felt by the building industry. Following only a slight downturn in building industry value creation in the fourth quarter of 2008, a further downturn looks likely in 2009. However, the concrete industry in particular is well positioned. The homework has been done over the last ten years: surplus capacities have been reduced in many areas and workforce structures have been adapted to suit optimised manufacturing procedures. In this environment, the managers in the industry have to react in such a way that a qualitative and need-based supply of the building industry is guaranteed, taking into account the economic stimulus programmes.

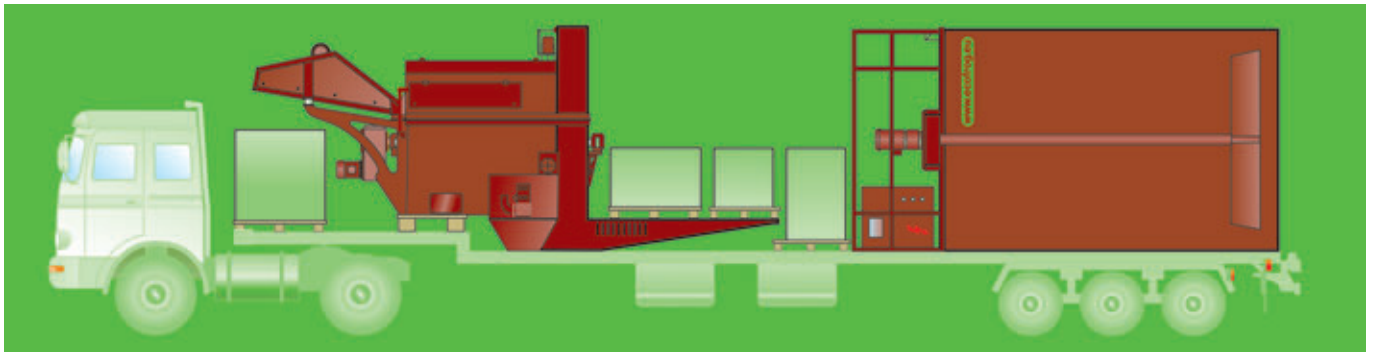


Fig. 1: MobiRE\_X 13 complete residual concrete recycling plant on a truck

■ Stephan Leutner, ecofrog GmbH, Germany ■

The governments in Germany and the rest of Europe are making an enormous effort to counteract the recession. One of the most important tools for this is investment in infrastructures. In real terms, this means support for the expansion of roads and railways on the one hand and measures for protection of the climate on the other. As a result of this development, two clear trends are recognisable - more mobility in the cast-in-situ concrete sector and the expansion of innovative building material technologies in the precast plant.

## Large-scale building sites/ready-mix concrete

The increasing number of projects in the road/rail and tunnel building sector, and in

future for the use of geothermal energy also, necessitates the setting up of temporary building sites with their own supply of fresh concrete. Almost all mixing plant manufacturers have now recognised these needs and have introduced suitable solutions into their product range.

At the same time, suppliers of residual concrete recycling systems have had to follow suit. Current figures prove the dedication of the building materials industry to a clean environment. The proportion of the gross value creation attributable to applications for environmental measures is increasing steadily. This is currently around 6 % in the cement industry.

The function of a residual concrete treatment plant is now generally familiar. The plant separates the residual concrete collected

during the cleaning of mixers, mixer trucks and concrete pumps into mixed gravel and residual water and makes these reclaimed components available for concrete production. The same applies to mobile recycling plants. These have a few additional special features:

- transportability - loading dimensions (L x W x H) 13.6 x 3.0 x 3.0 m (fig. 1)
- small space requirements of less than 50 m<sup>2</sup> due to compact construction and flexible installation possibilities
- short setup times of around 4 hours, made possible by the factory pre-fitting of mechanical, electrical and pneumatic systems, pluggable interface versions and modular construction (fig. 2)
- no foundations required - installation on concrete driving slabs and dispensing with a sub-surface concrete tank

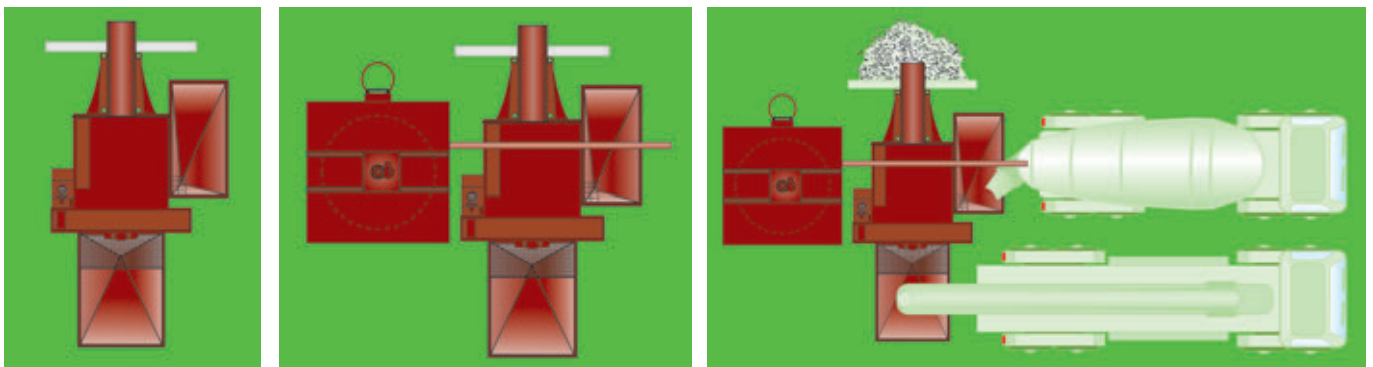


Fig. 2: Unloading and assembly in the shortest possible time

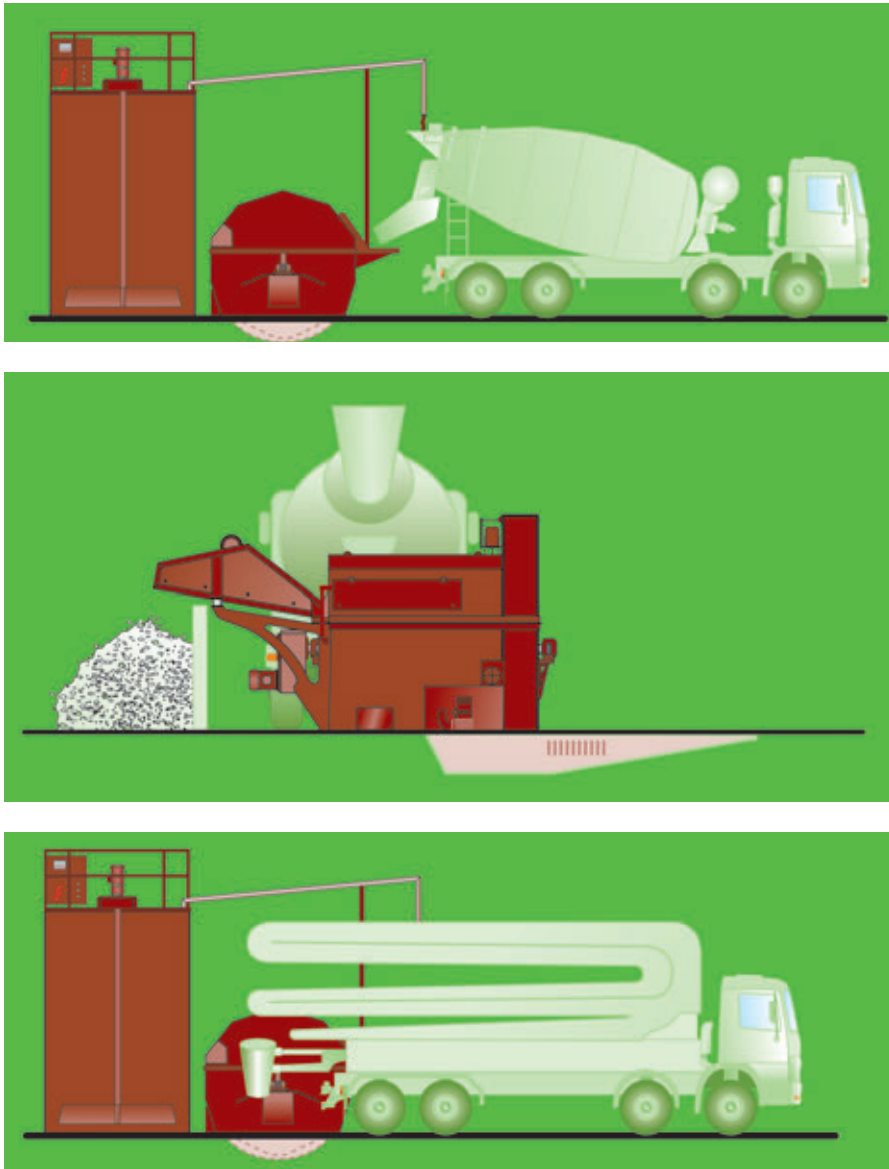


Fig. 3: Cleaning of mixer trucks and concrete pumps with the machine installed at ground level

- versatility – acceptance of residual concrete and washing water from stationary mixers, mixer trucks, concrete pumps and the yard surface (fig. 3)
- large residual water storage capacity (> 40 m<sup>3</sup>) in a steel container equipped with an agitator
- low energy requirements – installed power approx. 22 kW
- service-friendliness - which must not suffer as a result of mobility requirements. service intervals are indicated via the controller when necessary; work can be carried out without any special skills
- sturdy construction – as a basis for frequent damage-free assembly and disassembly
- suitable for building site personnel – on account of the change of location or of personnel, the plant operation must be

intuitive and safe (e.g. self-explanatory touchscreen display, password protection etc.)

Essentially, despite its mobile nature, such a residual concrete recycling plant must not be inferior in any way to a stationary plant.

#### High-tech concrete precast elements

Innovative building material technology and modern production techniques have changed concrete precast elements. The use of colour pigments, fibres, self-compacting and high strength concretes as well as elaborate surface treatments have become part of the daily routine. Accordingly, modern production facilities often feature very large halls with separate manufacturing centres, from grinding, washing and

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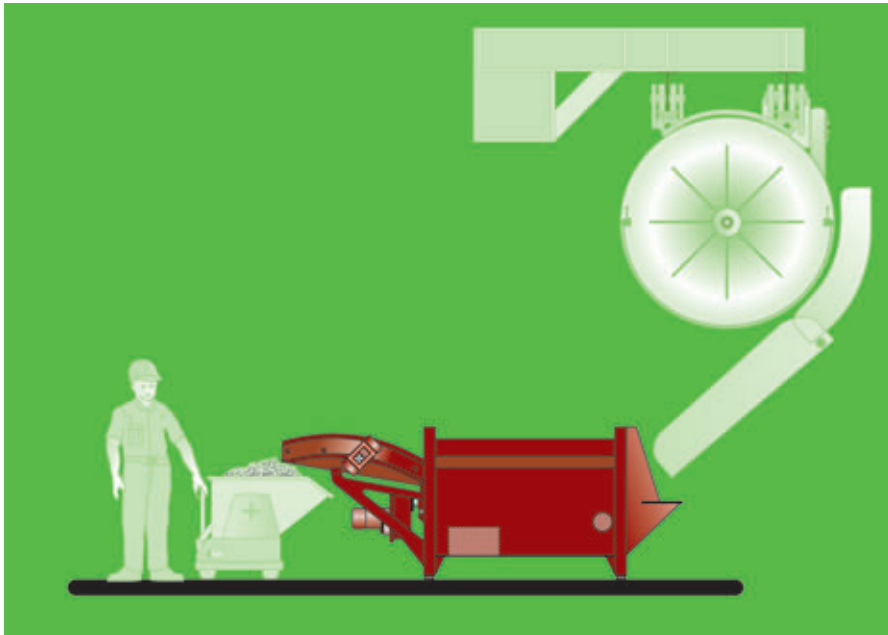


Fig. 4: Bucket track cleaning in the extremely compact RE\_X 02 machine: note the size ratios

blasting to acid treatment. The need for such concrete precast elements will increase significantly due to the economic stimulus programmes (thermal renovation in residential building and core renovation in public buildings). The advancing climatic changes also necessitate new building concepts, whose main materials are high quality concrete elements. In such an environment, a new direction for residual concrete plants is called for. The classic product range, comprising washout machines, water treatment plants and filter presses, must be supplemented by so-called island solutions. These are characterised by:

- extremely compact machines – (L x W x H) 3.0 x 1.3 x 1.3 m (fig. 4)
- adapted hourly output ( $\leq 2 \text{ m}^3/\text{h}$ )
- good mixed gravel drainage
- autonomous ultra-compact controller
- constant separation cut, independent of wear – reduces residual water pumping costs
- ground-level machine installation and residual concrete discharge
- low-budget solution – only low investment costs make it at all possible to install several island solutions assigned to the processing centres.

FURTHER INFORMATION



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