

## Self Compacting Concrete (SCC) beginning to build up a head of steam

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Following extensive investigation and feedback from Ready Mixed Concrete Companies and Contractors supplying/utilising SCC, The British Ready Mixed Concrete Association (BRMCA) has concluded that demand in the market place is growing rapidly as contractors and clients alike begin to recognise the significant benefits of using SCC.

Martin Hardwick (Product Director of BRMCA) confirmed that Ready Mix Concrete Companies had seen an upturn in enquiries and indeed utilisation of SCC and that industry predictions suggest that the market will continue to grow year on year.

Market data indicates the following:

Via a combination of The European Ready Mixed Concrete Association (ERMCO) statistics and the survey specific information, the following can be approximated:

- No. of enquiries - 10% Growth year on year
- Growth in volume terms – from near on Zero in 2000, to approx. 400,000m<sup>3</sup> projected in 2008, increasing rapidly year on year.
- Current market share against standard concretes is still extremely low and therefore this product has a massive growth potential, which will be significantly accelerated if specified and utilised within concrete frame applications.

Contractor comment suggests that, overall, the benefits of its utilisation may outweigh the additional initial or up front costs involved in its production and supply.

Self-compacting concrete (SCC) is a relatively new product that sees the addition of superplasticiser and a stabiliser to the concrete mix to significantly increase the ease and rate of flow.

By its very nature, SCC does not require vibration. It achieves compaction into every part of the mould or formwork simply by means of its own weight without any segregation of the coarse aggregate.

Developed in Japan and Continental Europe, SCC is now being increasingly used in the UK where apart from health and safety benefits it offers faster construction times, increased workability and ease of flow around heavy reinforcement.

Having no need for vibrating equipment spares workers from exposure to vibration. No vibration equipment also means quieter construction sites.

SCC is a generic term for mix designs that differ from traditional concretes at the molecular interface between the cement compounds and the admixture polymers.

The fluidity of SCC ensures a high level of workability and durability whilst the rapid rate of placement provides an enhanced surface finish.

SCC's high overnight strength gains allow rapid striking of forms and early loading of cast elements. High ultimate strengths in excess of 60N/mm<sup>2</sup> are achievable now, and it is anticipated that, with further development, strengths of 100N/mm<sup>2</sup> and greater will be available.

SCC is certainly the way forward for both in-situ and pre-cast concrete construction. The health and safety benefits and the improved construction and performance results make it a very attractive solution.

During the last decade, concrete technology has made an enormous advance through the introduction of self-compacting concrete. This application of nanotechnology in construction provides benefits from the perspective of materials technology and environmental protection and is presenting diverse opportunities to engineers and architects alike.

The range of benefits offered go beyond fundamental aspects of concrete quality and productivity; it includes a major improvement in the health and safety of workers. Reductions of noise levels on construction sites, together with utilisation of inorganic industrial wastes such as quarry dusts are additional benefits.

### **What the Contractors say in terms of Financial, Engineering and Health & Safety Benefits:**

#### ***Top 6 Responses re: Ways That SCC Can Improve Your Bottom Line:***

- Labour savings
- Easier placement over any distance or constraints
- Accelerated project schedules
- Reduced noise, safety, and environmental concerns
- Reduced equipment wear
- Fast placement without vibration or mechanical Consolidation

**Typical 'As Struck' finishes are shown below.**



**No repairs or 'rubbing down' took place on any of the columns shown above.**

*Specialist Concrete Contractor 'Stephenson' undertook the works, with 'Agilia' concrete supplied by Lafarge. Contract Ref. 'Echo 2', Main Contractor - Gleeson Building.*

BRMCA Members hope to convince more specifiers and specialist concrete contractors to use SCC within concrete frame applications and would welcome the opportunity to present detailed information regarding the product.

SCC will improve your bottom line, especially when high strength is an existing prerequisite. Labour and time are driving up costs for concrete producers and contractors.

SCC places quickly and easily with little or no vibration to give a smooth surface finish. Save money by reducing the wear and tear of equipment and improve the working environment for employees. Achieve very high early stripping strength that will yield a quicker turnaround on your forms. The smooth surface finish will minimize or eliminate the need for time-consuming cosmetic repairs.

Labour and time-to-completion are significant components of any job's economic picture. Since SCC flows easily, self-compacts and self-levels, placement is quick and easy, saving placement time, vibration time, labour, and equipment wear and tear.

SCC's high early form stripping strength and smooth finish mean faster turnaround and minimal cosmetic repairs, and a positive impact on maintaining projects on schedule.

Additionally, SCC's high cement content means that its economic benefits are amplified when high strength is a requirement. Plus, without the need for vibration, SCC results in fewer safety and noise concerns.

Within the feedback, all concerned were keen to point out the specific Health & Safety benefits of SCC and have stated that clients are also happy to consider the use of the material as an alternative to standard concrete designs if significant health benefits can be attained.

The Health & Safety Executive (HSE) have recognised the significant health benefits of utilising SCC and as a result have produced a 'SCC HSE Good Practice Guide' covering the 'Control and management of noise risks in CONCRETE AND CEMENT PRODUCTS'

This document is available on HSE Noise Web Pages: [www.hse.gov.uk/noise](http://www.hse.gov.uk/noise)

Further references with regard to the use of SCC, together with a detailed case study of applying best practice to In-situ concrete frame buildings can be obtained at:

[www.concretecentre.com](http://www.concretecentre.com) or [www.concretebookshop.com](http://www.concretebookshop.com) quoting reference TCC/03/07.

Please visit the BRMCA web site for more information and advice on Concrete Projects at [www.brmca.org.uk](http://www.brmca.org.uk) or **contact The Concrete Centre Helpline on 0845 812 000.**

