



An Introduction to Sprayed Concrete



Sprayed Concrete Association

- Sprayed Concrete Association was formed in 1976 by a small group of sprayed concrete contractors.
- The Association has grown considerably to include materials manufacturers, equipment suppliers and academia.
- The Members remain committed to the following aims :-

Aims

- Promote safety standards
- Training and Certification of operatives
- To encourage and promote the use of sprayed concrete
- To develop and maintain codes of practice and specifications
- To develop, encourage and maintain links with other interested bodies both nationally and internationally
- To encourage and promote, through regular meetings, publications, conferences and exchange of views advances in the technology of sprayed concrete

Processes

Dry Process

Material pneumatically conveyed to the water injection nozzle in dry state.

Wet Process

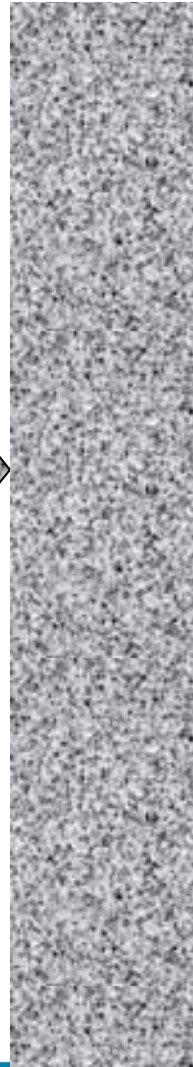
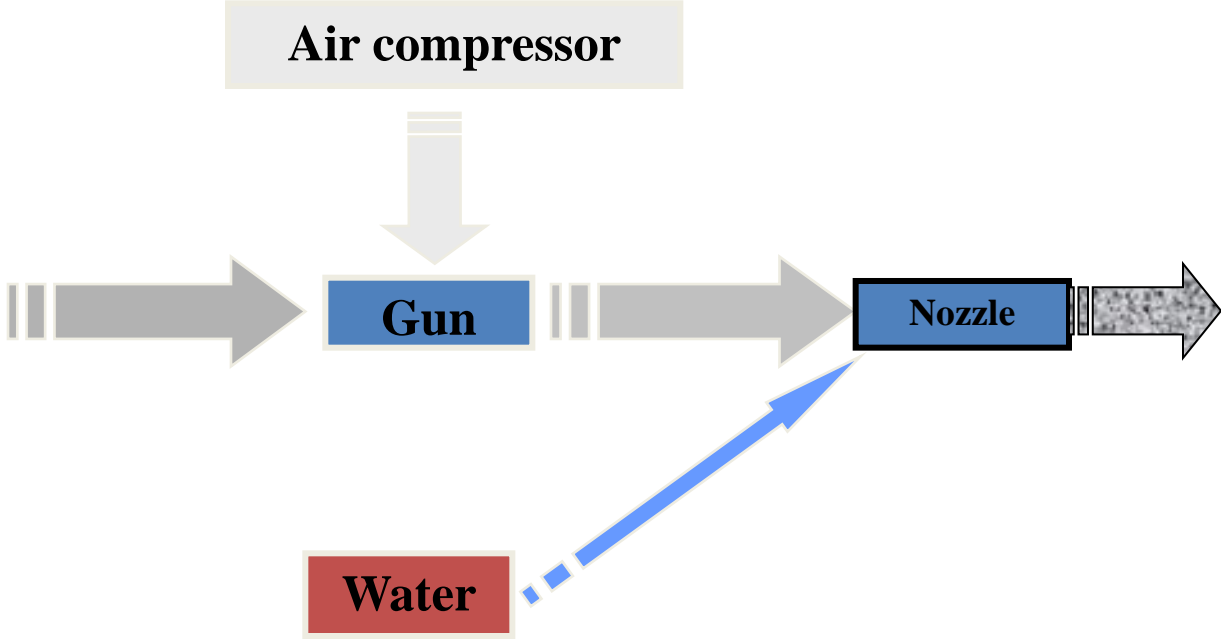
Material pumped to the air injection nozzle in a fluid state.

Robotics

Stand alone nozzle manipulators or fully integrated pump and nozzle units.

Dry Process

Pre-blended
25kg bag dry
cementitious mix



Dry Process



Processes

Dry Process

- On/Off capability, suitable for low volume intermittent work e.g. concrete repairs
 - Low volume 1-2m³/hr
 - High strength, high density and durability achievable with pre-bagged products
 - Test panels are produced for quality control, eg. core sampling
 - High quality finishes can be produced
-
- **Previously known as Gunitite**

Typical dry spray finishes



As Sprayed

Typical dry spray finishes



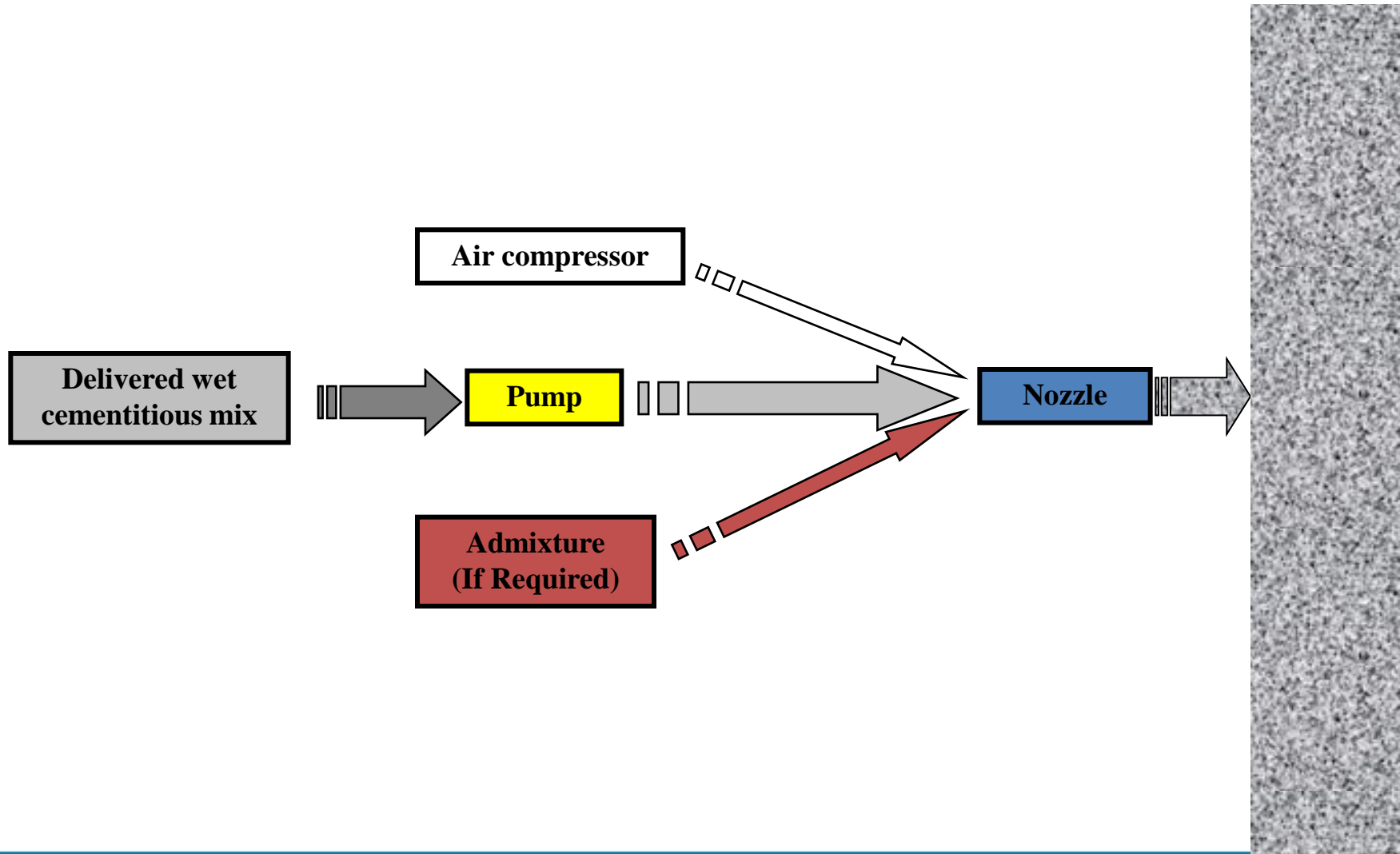
Cut and Flash

Typical dry spray finishes



Steel Float

Wet Process



Wet Process



Processes

Wet Process

- High outputs suited to large volumes, eg $> 12\text{m}^3/\text{shift}$.
 - Quality control of mix by standard cube tests.
 - Cured material has similar characteristics as traditional concrete
 - No atmospheric pollution created by this process
 - Not suitable for low volume work or interrupted production
-
- **Previously known as Shotcrete**

Typical wet spray finishes



As sprayed

Typical wet spray finishes



Cut and Flash Coat

Typical wet spray finishes



Wood Float

Robotics

- Operator out of area of application
- No manual handling of hoses
- Reduced operator fatigue, increased productivity
- High volume, not suitable for thin layers

Robotics



Testing of Sprayed Concrete



Testing of Sprayed Concrete

Dry Process;
Compressive strength testing on cores
and flexural strength testing on beams.

Wet process;
Flow table or slump testing.
Compressive testing of 150mm cubes
or 100mm cores.
Flexural strength testing of beams

Both processes;
Bond testing - 50mm cores into
structure and pull off rig attached.

Visual inspection for voids- 100mm
cores.



Applications

Jetty Repairs



Jetty Repairs



Marine works



Bund wall construction



Complex shapes



Repairs & strengthening



Slope stabilisation



Marine works



Water retaining structures



Tunnel Linings (SCL)



Rail Tunnels



Pile facings



Pigmented finish



Decorative Finishes



**The voice of the concrete repair
and refurbishment industry**

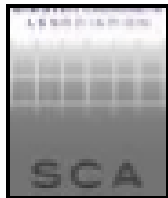
The Structural Concrete Alliance
brings together the expertise of:



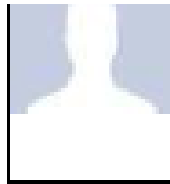
Training & Certification

SPRAYED CONCRETE ASSOCIATION

JOHN SMITH



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CATEGORIES OF CERTIFICATION

JOHN SMITH

SCA Card No: 9999

Employing Company: XXXXXX XXXXX

Certified categories:

Health & Safety Training: YES

Grit Blasting: YES

Steel Fixing: YES

Spray Machine Op DRY: YES

Spray Machine Op WET: YES

NATM Tunnelling with Robot: YES

Preparation: YES

Nozzleman DRY: YES

Nozzleman WET: YES

Foreman: YES

Publications

- Introduction to Sprayed Concrete
- European Specification for Sprayed Concrete
- European Guidelines for Sprayed Concrete
- www.sca.org.uk
- www.bamritchies.co.uk

