



part of the **CLL** GROUP

**PIONEER**  
CONCRETE PUMPS



# SHOTCRETE SOLUTIONS

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We employ a highly skilled team with specialised equipment who can provide professional concrete pumping services tailored to meet the specific needs of any project. We are experts in the application of Shotcrete.



## SHOTCRETE PROCESS

Shotcrete, also known as sprayed concrete, is a method of pneumatically applying concrete or mortar onto surfaces, especially in construction and repair projects, where it can be applied to vertical, overhead, and curved surfaces.

It is commonly used for structural repairs, ground stabilisation, and complex structures where conventional formwork is impractical or cost prohibitive. Typical applications include tunnel linings, rock slope reinforcement, sea walls, swimming pools and bridge repairs.



## PROCESS STEPS

### **SURFACE PREPARATION**

- Clean the surface of dust, dirt, loose material, oil, and grease.
- Wet the surface if necessary (especially in dry-mix) to improve adhesion.

### **MIXING (DRY-MIX OR WET-MIX)**

#### **Dry-Mix Process:**

- Dry ingredients (cement, sand, etc.) are mixed and fed into the delivery hose.
- Water is added at the nozzle during spraying.

#### **Wet-Mix Process:**

- All materials, including water, are mixed beforehand.
- The mixture is pumped to the nozzle and sprayed with compressed air.

### **SPRAYING APPLICATION**

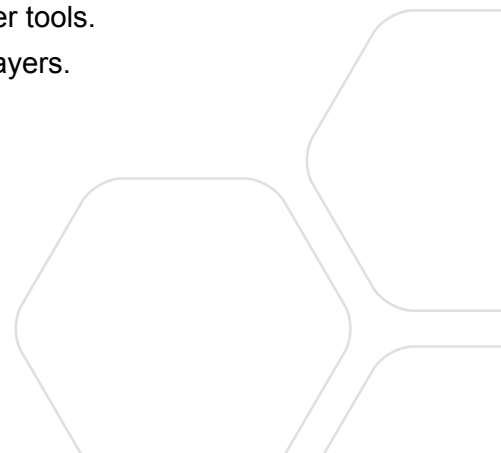
- High-velocity air propels the mix through a hose.
- At the nozzle, the mix is directed onto the surface in layers.
- A skilled nozzle operator controls the angle, distance, and consistency.

### **FINISHING**

- The surface is shaped and smoothed using trowels or other tools.
- Remove rebound (material that bounces off) and excess layers.

### **CURING**

- Keep the surface moist to ensure proper hydration.
- Use wet burlap, misting, or curing compounds.



# CONCRETE PUMPING SOLUTIONS

We specialise in delivering concrete solutions that are both reliable and effective, ensuring that your project runs smoothly from start to finish.

Shotcrete is an essential offering because it provides a flexible and efficient method of applying concrete, especially in challenging situations where traditional concrete pouring is impractical or cost-prohibitive.

## APPLICATIONS

Shotcrete is ideal for special construction and repair projects as it can be applied to vertical, overhead, and curved surfaces. Typical applications include:

### STRUCTURAL REPAIR & REFURBISHMENT

Shotcrete is a cost-effective way to repair and reinforce structures, especially where formwork is not feasible.

### GROUND SUPPORT

Often used in tunnelling and other excavation projects, shotcrete is ideal for stabilising rock and soil slopes.

### NEW CONSTRUCTION

It's used in various applications, including creating curved surfaces like in tanks or tunnels, and for applying concrete on thin overhead, vertical, or horizontal surfaces.

### WATERPROOFING

Shotcrete can be applied to walls to create a waterproof barrier making it an ideal solution for sea walls and swimming pools.

### CURVED AND FOLDED STRUCTURES

Shotcrete is ideal for constructing curved or folded sections for canals, tanks and tunnels.





## ADVANTAGES

Shotcrete offers several advantages over traditional concrete methods, primarily due to its application process. These include:

### FASTER INSTALLATION AND REDUCED FORMWORK

Shotcrete is sprayed onto the surface, which can eliminate the need for traditional formwork. This significantly reduces construction time and labour costs, especially for complex shapes or challenging access areas. Formwork is often minimal or used only for support, making the process faster and more cost-effective.

### VERSATILITY AND FLEXIBILITY

Shotcrete can be applied to vertical, horizontal, and overhead surfaces, making it ideal for various structures. It allows for greater flexibility in shaping complex surfaces, including curved walls, tunnels, and other intricate designs. The thickness of the shotcrete layer can be adjusted on-site to enable precise control over structural design and requirements.

### STRENGTH AND DURABILITY

Shotcrete exhibits high compressive strength and durability, comparable to or even exceeding that of cast-in-place concrete.

The process of pneumatically spraying concrete reduces the water-cement ratio, resulting in a stronger, more durable material, which is ideal for structural reinforcement, slope stabilisation, and tunnel linings.

### ADHESION AND BONDING

Shotcrete adheres well to various substrates, including concrete, steel, and masonry. It creates a strong bond between the new material and the existing structure, enhancing structural integrity. The high-speed pneumatic application process contributes to a robust bond between the shotcrete and the substrate.

### ADDITIONAL ADVANTAGES

- Reduced crane time, as shotcrete often eliminates the need for crane lifts.
- Cost-effective for repairs and renovations, as it can be applied directly onto existing surfaces without extensive demolition.
- Excellent for creating smooth, continuous surfaces, which are ideal for swimming pools and skateboard parks.



# STATE-OF-THE-ART SHOTCRETE EQUIPMENT

Our Aliva® Quick Connect Dynamo rotary concrete spraying machine is state-of-the-art technology, that we use on a wide range of construction projects for applying concrete or shotcrete mixtures onto various surfaces and structures.

## FUNCTIONS

Dry and wet spraying shotcrete.

It is used with rotary machines and concrete pumps to create a complete, self-sufficient concrete spraying system.

It quickly and easily attaches to large or small excavators to transform the machine into an efficient concrete spraying machine.

## APPLICATIONS

These pumps are used in a wide range of applications, including:

- Concrete repair.
- Tunnel construction.
- Slope stabilization.
- Excavation support.





## BENEFITS

- Quick and easy to install.
- Capacity for large volumes.
- Increases reach without the need of scaffolding.
- Exceptional precision and reduced “shading” due to the automated rotating feature.
- Compatible with rotary machines and concrete pumps as a complete, self-contained concrete spraying system.
- Suitable for any excavator and compatible with all common quick-change systems, so it can be quickly attached to transform the construction machine into a concrete spraying machine in no time.
- No external power supply is required for operation.
- Radio remote control.
- Connects to the excavator hydraulics.
- The new oil flow control system allows the Aliva Quick Connect spray head to be used even more flexibly on large and small construction machines, for excavation pits, slope stabilisation, or tunnel construction.
- It can also be mounted on telehandlers to apply shotcrete to steep banks without the need of using rope access or EWP.

# SIGNIFICANT PROJECTS

We provide complete concrete pumping solutions tailored to meet the specific needs of any project with precision and efficiency, including large-scale commercial and industrial projects, such as warehouses and supermarkets, infrastructure projects for roads, bridges, marine walls and tunnels, high-rise buildings, retirement villages and residential homes.



**SEA WALL REPAIRS  
THE STRAND, TAURANGA**



**75M WATER SLIDE  
KATIKATI**





**THE PITAU,  
MOUNT MAUNGANUI**



**RETAINING WALL  
MOUNT MAUNGANUI**





**AUCKLAND**  
14 Wookey Lane  
Kumeū  
Auckland 0810

**TAURANGA**  
3 Brook Street,  
Parkvale  
Tauranga 3112

For more information contact Phone:  
Email:

09 412 7048  
info@antarespumps.co.nz