Shotcrete Technologies, Inc.

Shotcrete Technologies, Inc. (STI), is a Colorado company with a global reach that supplies mining, tunneling, and infrastructure projects with quality shotcrete products and services that includes:

- **STI Shotcrete Equipment**, including our industry-standard Shot-Tech Robotic Arm which can be mounted on many types of carriers.
- **STI Shaftlining**, a robotic system for lining/repairing shafts and tunnels. This new process is quick, non-disruptive, efficient, and at a lower cost than conventional techniques.
- **STI Shotcrete Accelerators** and admixtures, including our well-known Shotset 250 accelerator and ST Alkali Free.
- **Technical Support and Training**: The STI team of professionals understand, support, and add value to every aspect of your shotcrete application.
- **Auxiliary Equipment**: pumps, hoses, and everything you need for a complete system.

Our service starts long before the spraying begins. With over 35 years of global experience, expect our professionals to be involved from start to finish on your shotcrete project. Whether it’s small-volume infrastructure repair or 10,000 yd³ (8000 m³) on a mega-project, STI prides itself on individual solutions for every job. In addition to our core team, we have a network of top professionals: engineers, specifiers, project managers, and nozzlemen that work with us to ensure the most efficient and cost-effective result for our customers.

**SHOT-TECH ROBOTIC ARMS**

The Shot-Tech Robotic Arm sets the standard for robotic shotcrete in most every application from 5 to 40 yd³/h (4 to 31 m³/h) in tunneling, mining, and other applications both under and above ground. It is also the choice for dry-mix applications, depending on the shotcrete pump/delivery system. Our versatile workhorse is designed for mounting on a variety of carriers, including flatbed rail cars, tractors, trucks, and loaders. It has become an industry standard for reliability and productivity and provides many thousands of yd³ (m³) of dependable shotcreting for a reasonable investment.

Standard reach: 29 ft (8 m) vertically and 23 in. (5.5 m) horizontally. Boom and nozzle rotation both a full 360 degrees. Radio- or remote-controlled with proportional functions. Nozzle tilt: 100 degrees.

**SHAFTLINING**

The system constructs a new permanent in-place lining using a cementitious mixture that will develop a compressive strength of 6000 psi (41 MPa) or greater in 7 days. The Recent Project Highlights

- I-70 Twin Tunnels, Colorado
- San Francisco Hydro, Ecuador
- Hollywood Station, LA Metro
- Lake Mead Outlet, Nevada
- East Side Water Intake, New York
- Kinross Gold
- Barrick Gold
- Storm-Water Repairs, Mumbai
- Caracas Metro, Venezuela
- E330 Bellevue Tunnel, Washington

![Fig. 1: Positioning and ready to begin the video. Note the bars of lights so we can get a very clear picture of what the shaft looks like](image1)

![Fig. 2: Getting everything in position prior to the operations beginning of the shaft lining](image2)
resulting lining is more acid- and abrasion-resistant and more impermeable than ordinary concrete.

The STI custom-designed system is operated via remote control with cameras, using a “spinner” or double nozzle that uniformly sprays the material onto the surface and will fit through an opening as small as 3 ft (1 m) in diameter so no excavation is needed. A crew of three can place up to 500 ft (152 m) per day of 1 to 2 in. (25 to 50 mm) thick under normal circumstances. After the lining is in place, it is ready within hours of placement with no adverse effect on the environment.

SHAFTLINING SUCCESS

- In December 2015, Pan American Silver was raise boring a 2011 x 20 ft (613 m deep x 6 m wide) I.D. shaft in Zacatecas, Mexico. The upper 689 ft (210 m) was in questionable ground, so it was decided to raise a smaller 10 ft (3 m) I.D. bore, shotcrete the shaft, and then excavate from the top and down.
- The day after the bore machine was removed, STI lowered a camera down and marked where 3 in. (75 mm) of shotcrete was needed—a total of 240 ft (73 m) in various areas.
- At 11:00 a.m., we started lining a flash coat top to bottom. We then lined 3 in. (75 mm) of shotcrete where needed and by 6:00 p.m. the same day, we had completed the shaft lining—a total of 39 yd³ (30 m³) was in place!
- The STI Shaft Lining Mix was made on site using local material and an on-site batch plant.
- There was no noticeable rebound and this structural shotcrete would reach 3191 psi (22 MPa) in 24 hours. Our process-oriented approach includes helping you from mixture design and specification to material handling, logistics, equipment selection, and training. Total support from the ground up!