AC-3 dry and wet shotcrete machine

Solutions for mining, tunnelling, building, reconstruction, slope protection and refractory application
**Shotcrete** — is the construction technique, where concrete pneumatically conveyed through a hose and projected layer by layer at high velocity onto a surface.

Shotcrete (dry and wet mixes) is a versatile, flexible and economical method of construction and reconstruction. Properly chosen equipment allows to achieve good results in sprayed concrete application. TORNADO offers equipment, effective for the following types of work:

### Applications
- repair of concrete and reinforced concrete structures
- construction of tanks and containers
- slope protection in tunneling and mining construction
- application of refractory materials in metallurgy, chemical, glass, cement and other industries associated with high-temperature processes
- soil stabilisation (pits and storage facilities, strengthening of the slopes at the construction of interchanges, bridges and so on.)
- conveying of loose materials (sand, gravel, etc.).
- as a sandblasting equipment
- sprayable membranes application
- house building incl. EVG 3d panel

### Method advantages:
The use of combined equipment for dry and wet shotcreting combines the advantages of both methods, and is characterized by:
- improved characteristics of mechanical strength, higher concrete density, better frost-resistance and water resistance
- high initial strength of sprayed concrete layer (dry method)
- high level of adhesion to different surfaces (dry method)
- the possibility of conveying mixtures to long distances (up to 400 m; dry method)
- ability to work in the “start-stop” mode (dry method)
- the reduced dust formation (wet method)
- a minimum “rebound” of the material, minimization of material losses (wet method)
- the possibility of using the unit as a concrete pump

### Working principle
Dry or hydrated mix (aggregates, additives, astringent e.g. cement) is loaded into a hopper, where it falls into the rotary dosing drum. Then followed by compressed air, mix is fed into the spraying nozzle.

In the dry method, at the base of the nozzle, the material is mixed with water and entrained by air onto the shotcrete surface. With a wet method, in the nozzle, the material is further accelerated by air.

Upon impact with the surface, significant concrete consolidation is achieved.
Overview

TORNADO AC-3 shotcrete machine uses classical rotary principle. The performance of shotcrete equipment is characterized by a large safety margin for heavy duty operation, as well as the versatility of dry and wet methods. The machine is recommended for use to place large volumes of shotcrete in mines, tunneling, as well as for soil stabilization. AC-3 machines have been widely used at numerous objects in the CIS, European and Asian countries for 15 years and already proved their high reliability and maintainability level in the difficult operating conditions.

Features and benefits

1. Pneumatic large-diameter wheels ensure easy movement on the construction site
2. Massive design with a three-fold safety factor ensures trouble-free operation even in the most demanding conditions
3. The multi-point fixing system of the metering head with the cushioning system ensures a uniform constant pressing of the sealing plate that provides its uniform wear
4. The design with a double air supply and a powerful turbulent blower makes it possible to use the unit both in dry and wet mode and makes it the most versatile for any tasks on shotcreting. Fast cleaning and easy access to wear parts minimize downtime
5. Different types of charging hopper provide maximum performance in the use of dry or wet shotcreting method
   - Sieve prevents extra-large size pieces to get into the dosing rotor
   - Simple and reliable vibrator provides the necessary exertion to deliver the mix into the machine
6. Protective apron protects the elements of machine from damage and contamination
7. Quick connection couplings are used. Construction site relocation takes a few minutes
Technical specifications

Theoretical output (dry method)
$m^3/\text{hour} \quad \dot{m} = \dot{Z}$
$m^3/\text{hour} \quad \dot{m} = \dot{W}$

Theoretical output (wet method)

Available diameter of material hose
mm

Maximum particle size of conveyed material
mm

Horizontal transport distance
m

Vertical transport distance
m

Required air pressure
mPa

Air consumption for transporting the dry mixture to a distance of 40 m
$m^3/\text{min}$

Engine

Main dimensions:

- Length
mm

- Width
mm

- Height
mm

Weight (without accessories)
kgt

Recommended assembly:

- AC-3 dry shotcrete machine (incl. feeding hopper, sieve, vibrator) on pneumatical tyres
- Abrasion resistant hose, 20 meters, diameter 50 mm
- Assembled nozzle, diameter 50 mm
- 1 spare nozzle tip
- 2 spare sealing plates
- Air hose, 20 meters
- Water hose, 20 meters

Available for order: hoses of various diameters, remote control, nozzles for different materials, explosion-proof electric motor, skids, rail platform, automatic lubrication system.

For the operation of the AC-3 machine required: the water supply pressure not less than 2 atm (dry method), the compressed air at least $8 \, m^3/min$, $9 \, kW$ electricity.
TORNADO specialized in dry and wet shotcrete works and structures strengthening for more than 25 years. This unique work experience allows us to provide full-cycle services for shotcrete contractors. We strive to consider on-site conditions to get the best result for our Client.

Wearing parts are always available for shipment

Free onsite nozzlemans machine operator training for wet and dry processes

Special equipment editions on demand: alternative versions of the drives, remote control, extra consumables, types of material hoses and nozzles

Full customer support