

Amatrice (Province of Rieti, Italy)

SCANDARELLO DAM

CONCRETE REPAIR AND A NEW WATERPROOFING SYSTEM FOR THE LAKE-SIDE FACE OF THIS CENTURY-OLD DAM



Construction of the reservoir at Scandarello near Amatrice (Province of Rieti, Italy) to produce and distribute electricity, commenced in 1918 following a decision by the Italian energy company U.N.E.S. which was acquired in 1962 by the energy group ENEL. The dam was designed by Angelo Omodeo in 1917 and is a concrete gravity-type structure which went into service in 1924. The Tronto lake, which covers an area of around 2 km² and is around 40 m deep, is fed

by a tributary of the River Tronto, the Scandarello stream, from which the dam takes its name. The dam wall is 44 m high and the crest of the wall is 200 m long.

The power plant is situated at the base of the dam and has an output of 2.5 MW. When it was originally built it had one hydroelectric generator and then, in 1944, its output was increased by adding a second generator. More recently, a mini hydroelectric power plant was created us-

ing the minimum in-stream flow of 250 litres/second from the discharge valve at the bottom of the dam. The output of the plant is 100 kW, sufficient for 220 homes.

High-performance and durability to repair the concrete

Over the course of 2019, Enel Green Power commissioned Co.ge.dit Srl to carry out the maintenance work and refurbishment of the dam. Mapei Major Projects Division was involved in the project right from the very start, initially by providing their specialised consultancy service, and then with personnel from the Technical Services to support and supervise the contractor while they were carrying out the various phases of the work.

The lake side of the wall was repaired by applying a large quantity of MAPEGROUT EASY FLOW, one-component sulphate-resistant, fibre-reinforced, shrinkage-compensated, thixotropic mortar which is recommended for restoring concrete structures deteriorated by sulphate salts in the water or ground. To let the expansive properties fully develop in open air, MAPEGROUT

EASY FLOW was admixed with 0.25% of MAPECURE SRA. This is a curing admixture with the ability to reduce hydraulic shrinkage and the formation of micro-cracks.

The joints in the valley side wall were repaired with MAPEGROUT 430 fine-grained, fibre-reinforced, normal-setting thixotropic mortar.

The structural joints were waterproofed with IDROSTOP, hydrophilic expandable rubber section, especially designed to form watertight construction joints in construction up to a hydraulic pressure of 5 atm. IDROSTOP PVC BE was also used during this phase of the work, a PVC waterstop used to make water-tight structural joints in reinforced concrete structures containing water. The product features good resistance to mechanical stresses, the aggressive action of chemical products, sea-water and acids.

The waterproofing work on the lake side of the dam was completed with MAPELASTIC GUARD, two-component, elastic cementitious mortar, which is used to protect large concrete structures subjected to high levels of stress and the action of water and atmospheric agents.

TECHNICAL DATA

Scandarello dam,
Amatrice (Province of Rieti, Italy)
Period of construction:
1918-1924
Original design: Angelo Omodeo
Year of the intervention:
2019

Intervention by Mapei:

supplying products for concrete repair and waterproofing the surfaces
Owner: Enel Green Power SpA
Design: Enel Green Power SpA
Works direction: Matteo

Sbarigia

Main contractor: Co.ge.dit Srl, Domenico Di Tomasso
Mapei coordinators: Stefano Barachetti, Lorenzo De Carli, and Paolo Banfo, Mapei SpA (Italy)

MAPEI PRODUCTS

Concrete repair: Mapegrout Easy Flow, Mapegrout 430, Mapecure SRA
Waterproofing surfaces: Idrostop PVC BE, Idrostop, Mapeelastic Guard

For further information see mapei.com



LEFT. The lake-side concrete wall was repaired by applying MAPEGROUT EASY FLOW, sulphate-resistant, fibre-reinforced, shrinkage-compensated, thixotropic mortar.

MAPEGROUT 430

Fine-grained, fibre-reinforced, normal-setting thixotropic mortar for repairing concrete.

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