



**MasterFlow®**

Solutions for the power industry



## Master Builders Solutions



The **Master Builders Solutions** brand brings all of its expertise together to create chemical solutions for new construction, maintenance, repair and renovation of structures. Master Builders Solutions is built on the experience gained from more than a century in the construction industry.

The know-how and experience of a global community of construction experts form the core of Master Builders Solutions. We combine the right elements from our portfolio to solve your specific construction challenges. We collaborate across areas of expertise and regions and draw on the experience gained from countless construction projects worldwide. We leverage global Master Builders Solutions technologies, as well as our in-depth knowledge of local building needs, to develop innovations that help make you more successful and drive sustainable construction.

The comprehensive portfolio under the Master Builders Solutions brand encompasses concrete admixtures, cement additives, chemical solutions for underground construction, waterproofing solutions, sealants, concrete repair & protection solutions, performance grouts and performance flooring solutions.





### Grouting solutions for the power industry

Increasing population, urbanization, and rising standards of living are driving the rapidly growing demand for electricity. In response, governments and investors are seeking to build more power plants, upgrade existing ones, and often convert older power plants to different fuel stocks. Investment in the development of sustainable alternate sources of power generation such as wind and solar is growing across Asia Pacific.

Traditional power plants use steam – driven turbines to create electricity. Turbines run at high speed for many years, and therefore need to be installed on a stable failure-free base. Ensuring that the turbine and generator drive shafts are aligned over the life of the facility is critical if the power plant is to avoid costly outages that disrupt its ability supply power. Grouts, which provide the vital link between turbines, generators and foundations, must be able to withstand vibratory and dynamic loads and support heavy equipment equally across all load points during their years of service without failure.

MasterFlow® cementitious grouts, invented in the 1930's and continuously improved in the years since, are the industry standard for heavy equipment grouting. They have been engineered to expand when in their liquid form, thereby compensating for the natural tendency of cementitious products to shrink and ensuring the complete filling of the space between the equipment and the foundation. They are chemically engineered to overcome the natural long-term shrinkage of the cement matrix, providing the necessary long term support of the machinery.

Turbines and generators are large and heavy equipment that require large amounts of grout to support them. The MasterFlow range of grouts can be applied rapidly in large quantities, either via mechanical means such as a pump or by labour intensive manual installation. MasterFlow grouts are designed and engineered to provide the optimum strength to transfer the load to the foundation depending on the thickness of the grout bed. MasterFlow grouts feature extended open times even at high temperatures to allow consolidation of the grout and to ensure that the machine is completely supported.

### Solutions for alternative power generation systems

The global need for green energy has led to greater use of wind turbines in Europe but more recently strong growth in Asia Pacific. Wind turbines create special demands on the grout which supports the turbine towers. It has to cope with a range of forces not occurring in conventional steam turbines, generators and rotating equipment. In on-shore installations the grout bed must withstand not only the compression forces of the tower but also torsional and bending forces caused by the rotating blades and wind action. When the first wind farms were being developed, these forces posed a challenge that traditional grouts could not cope with; new technology was required. The new generation 'wind power grout' needed to have a much higher compressive strength in order to transfer the load through a relatively small bed, but most importantly also had to have superior fatigue resistance. Master Builders Solutions developed the first grout in the world that could demonstrate superior fatigue resistance and cope with the additional forces.

The grouting of offshore wind turbine installations has an even greater level of challenge because the grout has to be able to work not only in compression but also in shear. The extra forces exerted upon the installation are a challenge for which very few products are able to meet the demanding performance requirements. Offshore installations are often in remote areas, many of which experience extended and very cold temperatures during the winter months. Master Builders Solutions worked with the specialist offshore contractors, certification bodies and universities in Europe to find solutions to these problems. Their efforts produced the MasterFlow wind turbine grouts that cure at low temperatures within a controlled set time, allowing the grout to be pumped for a longer period and installed faster over an extended working season. This provides the installer with the ability to install more turbines per year, resulting in a quicker return on investment for those funding the project. It also results in the reduction of CO<sub>2</sub> emissions into the atmosphere from traditional power generation.







### Solutions for renovation

Eventually turbines, generators and other rotating equipment will reach the end of their effective working lives and require renovation or replacement. During the maintenance of the equipment, the grout must be replaced. MasterFlow epoxy based grouts have been used successfully in these circumstances on many occasions due to their rapid strength gain and their ability to be poured in thick section, allowing the equipment to be re-commissioned and returned to service faster.

In any renovation project, there will be various other components of the building that will require repair or replacement. Master Builders Solutions has a range of products suitable for renovating cooling towers, coal storage areas, floors and other areas within a power plant. Master Builders Solutions has a long track record and wide experience in the repair of damaged concrete and application of chemically resistant protective coatings. Many of our products such as MasterEmaco® and MasterProtect® can be combined on a refurbishment project to provide a one stop fast and economical solution.



# Master Builders Solutions for the Construction Industry

**MasterAir®**

Complete solutions for air entrained concrete

**MasterBrace®**

Solutions for concrete strengthening

**MasterCast®**

Solutions for the manufactured concrete product industry

**MasterCem®**

Solutions for cement manufacture

**MasterEmaco®**

Solutions for concrete repair

**MasterFinish®**

Solutions for formwork treatment

**MasterFlow®**

Solutions for precision grouting

**MasterFiber®**

Comprehensive solutions for fiber reinforced concrete

**MasterGlenium®**

Solutions for hyperplasticized concrete

**MasterInject®**

Solutions for concrete injection

**MasterKure®**

Solutions for concrete curing

**MasterLife®**

Solutions for enhanced durability

**MasterMatrix®**

Advanced rheology control solutions for self-consolidating concrete

**MasterPel®**

Solutions for water tight concrete

**MasterPolyheed®**

Solutions for high performance concrete

**MasterPozzolith®**

Solutions for water-reduced concrete

**MasterProtect®**

Solutions for concrete protection

**MasterRheobuild®**

Solutions for superplasticized concrete

**MasterSeal®**

Solutions for waterproofing and sealing

**MasterRoc®**

Solutions for underground construction

**MasterSet®**

Solutions for retardation control

**MasterSure®**

Solutions for workability control

**MasterTop®**

Solutions for industrial and commercial floors

**Master X-Seed®**

Advanced accelerator solutions for pre-cast concrete

**Ucrete®**

Flooring solutions for harsh environments

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