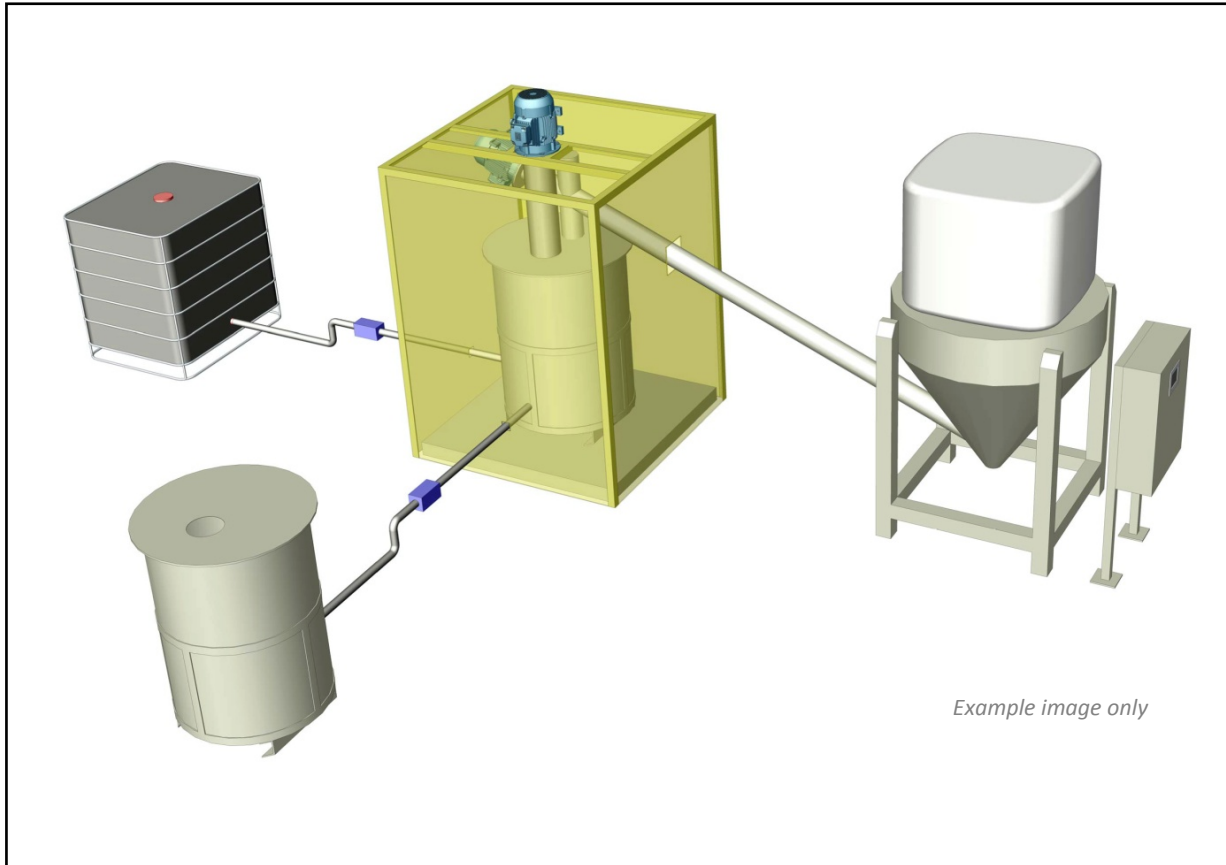


## RF-02-02 RESIN FILLING SYSTEM



The Resin Filling System is designed to prepare a chalk/resin mix for reinforcement spraying, but is also suitable for use with different materials for different industries and processes. The system is automatic, PLC controlled, and produces consistent and repeatable results.

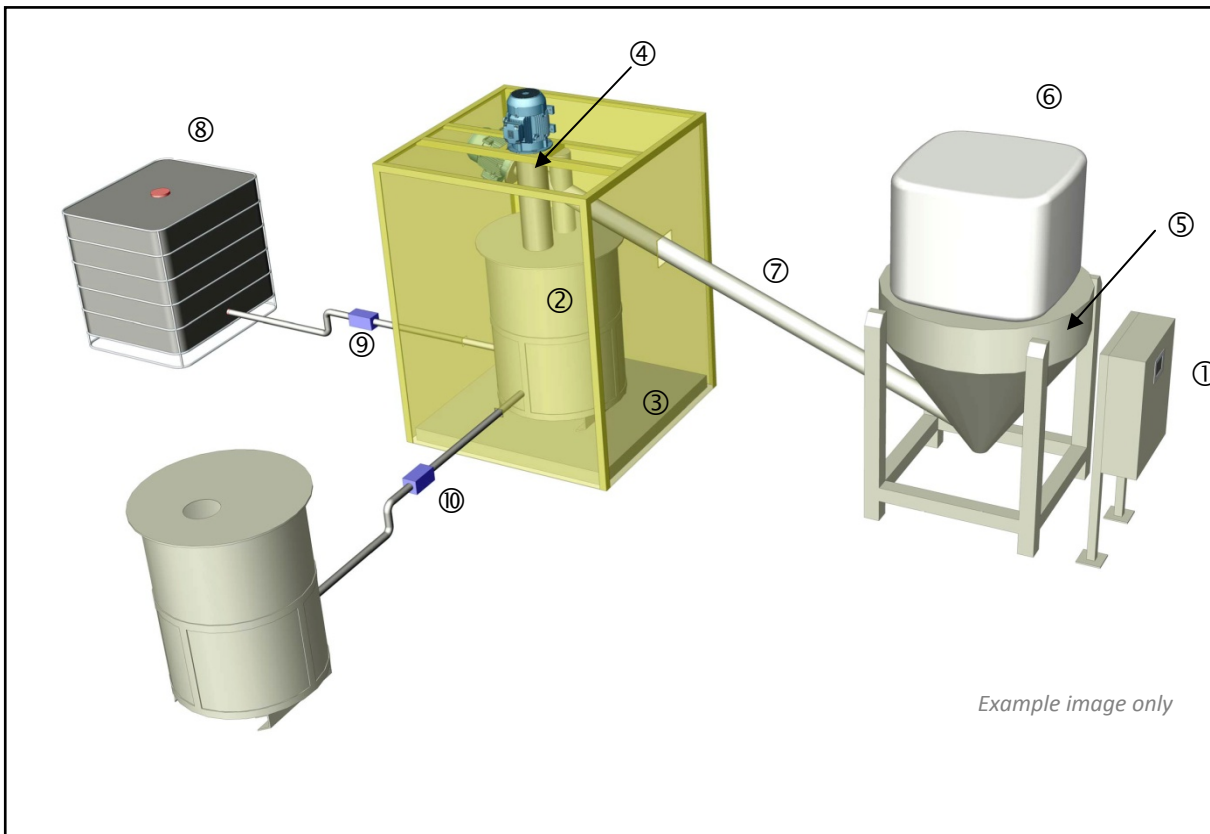
### General Description

An HMI with a built in PLC provides the operator interface ①. The operator can set the total weight of mix required, and also the ratio of chalk to resin.

Mixing of the chalk / filler and resin is carried out in a stainless steel mixing tank ②. The mixing tank is permanently mounted on a load cell ③ interfaced to the PLC, which can then measure the total weight of the tank.

Mixing is achieved with a high shear mixer ④ under control of the operating system. The high shear mixer is fixed into position, but can be removed for maintenance.

Alongside the mixing tank is a hopper ⑤ containing the chalk / filler. The chalk / filler bag ⑥ is lifted over the hopper using a fork lift truck and the contents released into the hopper. A feed screw ⑦ under control of the operating system takes the chalk / filler from the hopper to the mixing tank.



The resin is normally supplied in an industry standard Intermediate Bulk Container (IBC) ⑧. The IBC is carried and positioned by fork lift truck and a pump ⑨, supplied as part of the mixer system, is attached to the valve at the base. The pump is under control of the operating system.

At the bottom of the mixing tank there is a valve which is connected to a second pump ⑩, also under PLC control, which pumps the chalk / resin mix to the customer's reinforcement spraying tank or intermediate tank. This tank can be supplied as an option.

### Sequence of Operation

With the chalk / filler hopper filled, the resin IBC in place and the pump connected, the operator will key in the total quantity of final mix required. The filler / resin mix ratio can be set at this time, but normally this will not change from one mix to another.

From the total quantity required, the operating system will calculate the quantity of resin required and start to pump resin from the IBC into the mixing tank, at the same time the high shear mixer will be started. The weight of resin will be monitored by the control system until the required quantity is reached. A controlled quantity of chalk / filler will then be fed into the mixing tank, and the material will continue to be mixed for the programmed length of time. When the mixing cycle is complete, the material will be pumped to a storage tank.

### General

The Mixing System requires a floor area of approximately 5m x 1.6m, plus adequate clearance all round for cleaning and maintenance. This does not include the space required for the IBC or the final storage tank. The overall height of the system is 2.6m

### Benefits

Considerable cost saving will be achieved by carrying out the mixing process in house rather than buying in ready mixed product. Based on typical costs, savings of over 40% can be made on the cost of a 50/50 reinforcement mixture as is commonly available. The ratio of mix can be easily changed to suit the products, processes and quality requirements of the manufacturer and the mix properties are always consistent from one batch to another.

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