

# APPLICATION NOTE A047-ME01-1216B - CONTROLLED HUMIDIFICATION

---

APPLICATION NOTE A047-ME01-1216B

## CONTROLLED HUMIDIFICATION

**A leading UK company specializing in synthetic bone repair materials for orthopaedic and dental applications use Bronkhorst products to perfect their production process. A leader in the research and development of bone graft technologies.**

Bronkhorst have supplied Controlled Evaporation Mixing (CEM) systems for humidification of the furnaces that are used for the manufacture of the bone repair product.



---

### Application requirements

The furnace at over 1200 degrees Celsius will produce yellow powder if the water is not added, hence the use of the Controlled Evaporation Mixing system (CEM). The properties will not change just the colour of the powder.

The colour is crucial as yellow powder is rejected by surgeons as they believe it to be inferior quality. Having a consistent white colour therefore is of upmost importance.

### Important topics

- Accurate dosing of air constituents
  - Documentation of test conditions
  - Repeatability
  - Compact system
-

## Process solution

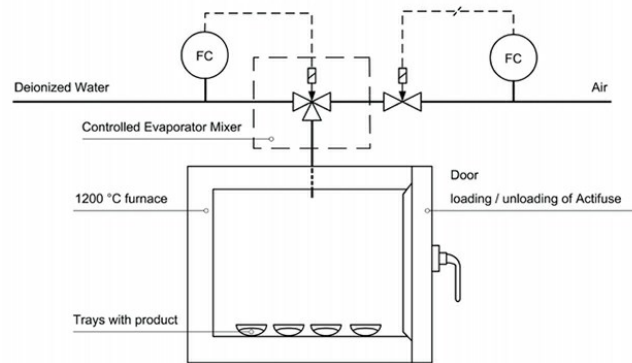
### Humidification of a furnace

After manufacturing the bone grafting powder it needs to be dried and sintered. The process is carried out in a high temperature furnace with a controlled atmosphere. If the atmosphere is not controlled properly, discolouration of the end product renders it useless for sale and cannot be re-worked. The accurate control of water to the furnace by means of a CEM, with air as the carrier gas, results in a perfect white colour recognised by the doctors using this product. Depending on the furnaces, the flow rate of water is accurately controlled at 42 g/h, 84 g/h or 122 g/h.

A high degree of control is needed for repeatable batch consistency of many years for this high value product.

### BRIGHT local readout and control

As an option, the systems can be used in combination with BRIGHT local Readout/Control Modules, to give a better visualisation for the user.



Flow scheme

## Recommended Products



**CEM EVAPORATOR W-202A**

Max. 120 g/h liquid;  
Max. 10 l/min gas  
Pressure rating 100 bar  
Very stable vapour flow  
Flexible gas/liquid ratio



**EL-FLOW SELECT F-201AV**

Min. flow 0,4...20 l/min  
Max. flow 0,6...100 l/min  
Pressure rating 64 bar  
Compact design  
High accuracy and repeatability



**LIQUI-FLOW™ L13**

Min. flow 0,25 ... 5 g/h  
Max. flow 5 ... 100 g/h  
Pressure rating 100 bar  
Compact, IP40 design  
Analog, RS232 or fieldbus I/O



**BRIGHT - COMPACT LOCAL READOUT/CONTROL MODULE**

Bright, wide angle, 1.8" display  
User friendly operation  
Indication/operation/configuration



**BRONKHORST HIGH-TECH B.V.**

Nijverheidsstraat 1A

NL-7261 AK Ruurlo (NL)

Tel. [+31 573 45 88 00](tel:+31573458800)

[info@bronkhorst.com](mailto:info@bronkhorst.com)