

# CHIMIA REPORT/COMPANY NEWS

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Companies present themselves and their products

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## Green Chemistry for Industries: The **WAB IMPA<sup>°</sup>CT REACTOR<sup>®</sup>** An inductively heated agitator bead mill reactor for continuous mechanochemistry

Willy A. Bachofen AG (WAB-GROUP<sup>®</sup>) is the undisputed specialist in wet milling and dry mixing technology with its agitator bead mills (DYNO<sup>®</sup>-MILL) and three-dimensional shaker mixers (TURBULA<sup>®</sup>). For more than 60 years, WAB-GROUP<sup>®</sup> is setting the standard in quality and innovation for the world of mixing and milling. With our proven and flexible product portfolio, we support and consult our global customer base from various industries, such as pharmaceuticals, paint and coatings, cosmetics, food, crop protection and many more.

### Mechanochemistry

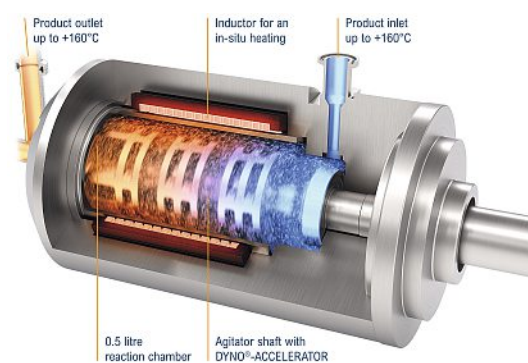
Mechanochemistry describes chemical transformation triggered by mechanical force. Due to the current impetus in promoting green chemistry for sustainable development, chemists have established catalytic reactions based on renewable resources and the application of less hazardous (less toxic) solvents with alternative technologies based on Mechanochemistry. It is a sustainable method for synthesising a wide range of chemicals and Active Pharmaceutical Ingredients (APIs). By using its mechanical force, this technology reduces toxic waste, improves the yield of the chemical reaction and optimises production costs. WAB-GROUP<sup>®</sup> considers mechanochemistry to be a major technology for a greener future in chemical industries. For this reason, WAB-GROUP<sup>®</sup> has been investing for several years in taking this technology out of the research laboratory for use in industrial applications. Researchers have proven the great advantages of mechanochemistry over conventional production processes. However, the conversion into industrial applications has not yet taken place because no suitable and scalable equipment was available. The disruptive **WAB IMPA<sup>°</sup>CT REACTOR<sup>®</sup>** closes this gap. It is the first agitator bead mill reactor with an inductive heating system for continuous mechanochemistry.



### WAB IMPA<sup>°</sup>CT REACTOR<sup>®</sup>

The **WAB IMPA<sup>°</sup>CT REACTOR<sup>®</sup>** applies mechanical energy by bead milling, enables in-situ heating, pressure activation in continuous flow and is scalable to industry requirements. The horizontal reaction chamber is a tool for an effective mass transportation and efficient activation of a chemical reaction. It can be used for liquid and viscous pumpable products and heterogenous catalysts.

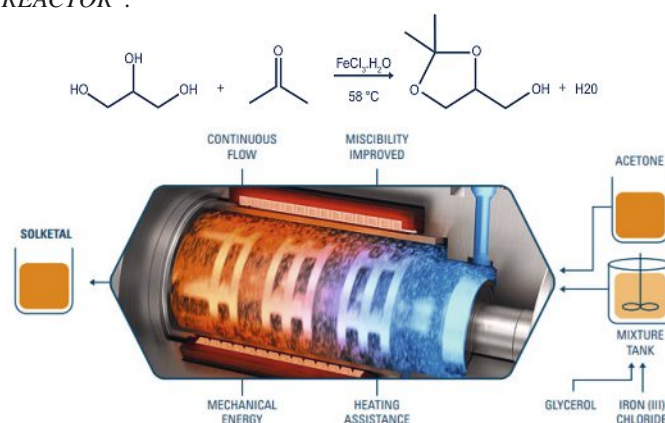
### Working Principle



An inductive heater arranged around the stirring elements enables direct and efficient heating of the reactants up to +160 °C. Together with the impact beads located in the reactor chamber, this technology guarantees a high and uniform mechanical energy input and surface renewal of the reactants. Additionally to the application of endothermic processes, it can also be used for exothermic reactions due to its excellent cooling properties. Conventional batch processes can be replaced by a continuous process. The **WAB IMPA<sup>°</sup>CT REACTOR<sup>®</sup>** is a ground-breaking, user friendly and application-specific apparatus for molecular synthesis by means of mechanochemistry. It enables faster, more selective and innovative reactions, a significant saving of solvents and industrial scale-up from g/h to t/h.

### Application Example: Synthesis of Solketal

Solketal is a synthesis building block in the chemical and pharmaceutical industry and can be produced on the **WAB IMPA<sup>°</sup>CT REACTOR<sup>®</sup>**.



Contact us to test and develop your chemical reaction in our fully equipped Process Technology Centre in Muttensz (CH).

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