VINCI TECHNOLOGIES
Laboratory and field instruments for Petroleum Industry

CE- Catalyst extruder

Designed for the small-scale production of industrially relevant shaped catalysts

The CE – Catalyst Extruder is a high-precision piston-type extrusion system designed for the small-scale production of industrially relevant shaped catalysts. Developed for research and development laboratories, pilot testing facilities, and formulation development programs, the CE enables accurate replication of industrial extrusion conditions at laboratory scale. Because extrusion directly influences catalyst geometry, density distribution, mechanical strength, and pressure drop performance in reactors, the CE provides a controlled and repeatable shaping platform that ensures meaningful and transferable experimental results.

VINCI TECHNOLOGIES Parc de l'Ile, 27B rue du Port, 92022 NANTERRE
Phone: +33 1 41 37 92 20 - vincinet@vinci-technologies.com - http://www.vinci-technologies.com

The CE operates on a piston-driven extrusion principle, allowing precise control of the applied pressure throughout the shaping process. This controlled pressure application ensures stable material flow through the die and minimizes structural defects such as cracking, internal voids, or dimensional inconsistencies. By accurately reproducing industrial extrusion forces, the CE enables researchers and process engineers to evaluate paste rheology, binder efficiency, moisture optimization, and extrusion behavior under realistic processing conditions. This capability significantly reduces development risk when scaling formulations from laboratory trials to pilot or full-scale production.

The system is compatible with a wide range of catalyst pastes, including alumina-, silica-, zeolite-, and mixed-oxide-based formulations with varying viscosity and plasticity levels. Its robust mechanical construction ensures stable operation even when processing highly viscous or cohesive materials. The piston-type configuration guarantees excellent batch-to-batch repeatability, enabling direct comparison between different formulations, processing conditions, or binder systems. Such reproducibility is essential in R&D environments where small variations in composition or moisture content can strongly influence final catalyst properties.

Safety and structural reliability are integral to the CE design. The unit is manufactured in full compliance with ASME standards, ensuring mechanical integrity and safe operation under elevated pressures. This compliance guarantees compatibility with demanding laboratory and pilot-scale operating standards while providing confidence in long-term durability. The mechanical design is optimized for repeated extrusion cycles, maintaining consistent performance over extended use.

In practical operation, the CE transforms homogeneous catalyst paste into uniform and dimensionally consistent extrudates suitable for subsequent drying, calcination, mechanical testing, and catalytic performance evaluation. Stable extrusion pressure and controlled flow conditions result in extrudates with reproducible density and geometry, which directly improves the reliability of downstream crushing strength, attrition resistance, and activity testing.

By replicating industrial extrusion behavior at laboratory scale, the CE facilitates smooth and predictable scale-up. It allows process engineers to fine-tune formulation parameters and extrusion settings before transferring the process to industrial equipment, reducing time-to-market and minimizing costly production trials.

In summary, the CE – Catalyst Extruder combines precise piston-driven pressure control, robust ASME-compliant construction, and compatibility with diverse catalyst formulations in a compact laboratory platform. It delivers reliable, reproducible shaping results while ensuring safe and standards-compliant operation in R&D and pilot-scale environments.