

CORNING

The future flows through
Corning® Advanced-Flow™ Reactors



Corning® Advanced-Flow™ Reactors (AFR)

Corning Advanced-Flow™ Reactors (AFR) is a global leader in end-to-end continuous-flow chemical processing equipment and services for pharma, fine chemicals, agrochemicals, and performance materials industries.

Our products and services leverage inherently safer processing technology and are specifically designed to enable the conversion from traditional batch to continuous flow chemical processing.

Our technology and services can provide a step change in performance in critical areas such as pharmaceutical development and inherently safer processing of large-scale chemicals.

Services

Corning® Advanced-Flow™ Pharmaceutical Technologies (AFPT) services is designed to help customers reduce capital expenses and enable an expedited transition to flow chemistry – which ultimately helps get products out to market faster. AFPT helps bridge the gap between development and production, whether it be drug discovery to production in pharma or other chemical industries. Other services include:

- Workshops and trainings
- Basic and detailed auxiliary systems engineering
- customized turnkey solutions
- FAT/SAT and industrial start up
- Assistance for equipment qualifications following cGMP/FDA requirements
- Pre-and post purchase technical support
- Compliance with international standards (ATEX, ASME, PED, SELO, KGS. etc.)
- Global network of AFR Applications Qualified Labs (AQLs)



Seamless scale-up

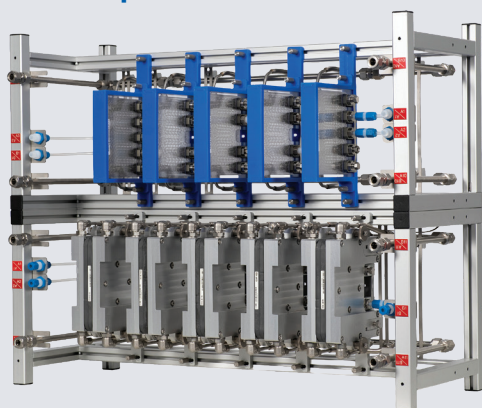
Corning provides a variety of innovative continuous flow reactor products that are designed and optimized to quickly and seamlessly scale-up from academia and lab feasibility, to process development, to large scale industrial production of chemicals.

Lab Scale



Corning Lab Reactor System 2

Process development



Corning G1 Hybrid Reactor for Multipurpose Process Development System

Industrial production



Corning G4/G5 Integrated Production System

Products

Corning AFR offers a best-in-class portfolio of flow chemistry products for education and lab to industrial solutions. Continuous flow chemical production utilizing Corning Advanced-Flow Reactors can provide:

- Seamless scale-up
- Increased production yields
- Lower overall production costs
- Enhanced plant safety
- Higher product quality
- Decreased waste generation and energy consumption
- Faster product time to market
- Inherently safer solutions for creating energetic materials

Corning's reactors can be effectively run on reactions with miscible and immiscible liquids, and gases and liquids containing some amounts of small solids particles.

Many different types of reactions are well suited for Corning's reactor systems, including:

- nitration
- bromination
- diazotization
- sulfonation
- hydrogenation
- alkylation
- oxidation
- methylation
- peroxidation
- organo-metallics
- ozonation
- Grignard reaction
- epoxidation
- polymerization
- fluorination
- photo reactions
- chlorination
- ... and others

Corning Advanced-Flow Reactors can be integrated into existing chemical processing infrastructures and designed upon request to ATEX and cGMP standards. Corning's reactors can be easily incorporated into industrial systems via standard connectors, helping customers migrate to Corning's technology with little to no downtime.

CONTACT:

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