

ABOUT VIRENT

Founded in 2002, Virent, a catalyst and technology development company specializing in bio-based fuels and chemicals, is now offering contract R&D services through its facility in Madison, WI.

Virent is uniquely positioned as a partner for contract R&D. Virent offers 24 continuous lab/pilot scale testing rigs that can be reconfigured to meet a customer's needs. Virent has three demonstration units allowing 100X scale-up and a highly trained work force able to accommodate 24-hour a day continuous run operations. Virent has a metal fabrication workshop allowing for in-house adaptation and modification of these units.

Operations are supported by a state-of-the-art analytical department with the necessary instrumentation and expertise to provide method development or transfer in of your SOPs in chromatography, micro-pulse testing, spectroscopy, wet chemistry, physical properties, or catalyst characterization. Client data is managed through a state-of-the-art data management system. Virent's procedures ensure protection of your confidential information.



Contact Us

Virent, Inc.
3571 Anderson St.
Madison, WI 53704



(608) 237-8600 Ext. 206
contract_services@virent.com



Contract R&D Services



Foundation

- **Excellent safety record**
- **Strong procedures to protect client IP**
- **Experienced staff**
 - Chemists and chemicals engineers
 - On-site machinist and support staff
- **Operation:** 24 hours, 7 days per week
- **Flexible unit configurations**
- **Utilities**
 - Hot oil
 - Cooling water
 - Nitrogen (5 psig, 100psig, 2000 psig)
 - Hydrogen (up to 1950 psig)
 - DI/RO water
 - Bulk solids handling
- **Analytical support**
 - Chromatography—GC, LC, IC, SEC, GC-MS, GCxGC-MS
 - Catalyst micro-pulse testing
 - ICP, IR, NIR, UV-VIS, TGA
 - Catalyst characterization
 - Access to microscopic analyses
 - LIMS data management
- **Metal fabrication workshop for custom design/modification**



Services

- **Process optimization**
- **Catalyst testing and development**
 - Preparation
 - Side-by side catalyst evaluation
 - Life studies
- **Core chemistries**
 - Hydrogenation
 - Hydrodeoxygenation
 - Alkylation
 - Isomerization
 - Heterogeneous catalysts
 - Others
- **Product sample preparation**
 - Kilograms to tons
- **Scale-up, 100-X**



Equipment

- **Batch Reactors**
 - 100/500 mL (350 °C, 2000 psig)
 - 2000 mL (300 °C, 2000 psig)
 - 2 gal (250 °C, 700 psig)
- **Continuous Reactors**
 - Over 20 fully integrated units consisting of single and multiple reactors with distillation. Can be readily reconfigured.
 - 1/2" & 1" OD, up to 32" in length
 - Pressure: up to 1950 psig
 - Temperatures: up to 540 °C
 - PLC/DCS process control
- **Pilot Distillation**
 - Batch and continuous packed columns
 - Vacuum to 200 psig
- **Demonstration –Scale**
 - Shell and tube reactors
 - 1" x 12' (400 °C, 1650 psig)
 - Single tube reactors
 - 2" x 7' (500 °C, 2200 psig)
 - 3' x 8' (625 °C, 200 psig)
 - Distillation columns
 - 2" x 7' (500 °C, 1900 psig)
 - 3" x 11' and 13.5' (400 °C, 325 psig)
 - 20+ theoretical stages
 - Melt crystallization
 - Process control:
 - Delta-V DCS/Rockwell PLC
 - Filtration
 - Ion Chromatography, including rotary SMB unit

Further equipment information available upon request.