

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

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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.