

SOCMA Specialty & Custom Chemicals Show

AVN R&D Overview

March 1-3, 2023





MATRIC is Now
AVN Corporation



THE AVN ADVANTAGE

AVN provides uncommon expertise and infrastructure to solve both the known and unrecognized technology and business problems. With AVN as an innovation partner, our customers are able to:

- Develop, design and deploy technologies which allow them to meet cost, growth, sustainability and mission goals;
- Accelerate technology discovery and development to advance critical business and societal objectives;
- Mitigate significant risk associated with new technology deployment;
- Maintain full ownership of their intellectual property rights;
- Work with the same partner from laboratory scale through manufacturing



ABOUT AVN

Research and development corporation formed in 2004:

AVN Corporation acquired MATRIC assets in 2023

Offices in Charleston and Morgantown, West Virginia

R&D and Engineering staff of over 100 professionals:

- 15 PhD-level researchers
- Several Professional Engineers
- 25+ average years of experience
- 1 member of National Academy of Engineering
- Highly skilled laboratory and pilot technicians



Focused on adding genuine value throughout the intellectual property development, technical services, R&D, technical engineering and commercialization processes.



HEADQUARTERED AT WEST VIRGINIA REGIONAL TECHNOLOGY PARK

World Renowned Campus

- Opened in 1949
- 681 acres
- Over 800,000 SQFT of buildings
- Former Union Carbide Global Technology Center
- Over 30,000 patents and \$18B in value created there

Major Facilities Include

- Research and development laboratories
- Several chemical pilot plants
- Univation polyethylene pilot plant operations center
- Two new community college facilities
- Renovation of major laboratory facility



AVN R&D FACILITIES

R&D Labs in Building 740

- Small-scale research labs
- Large floor to ceiling hoods
- Analytical lab

Building 770 Annex

- Two-story hoods
- Large-scale lab equipment and pilot

Building 771

- High-pressure and reactive chemical cells
- Larger-scale pilot facilities
- General utilities (steam, nitrogen, plant air, cooling water, 220/440V electric, process sewer, vapor destruction)

Automation

- Full automation is available at all scales via Siemens PCS7 Control System
- Data historian with secure, remote real-time access utilizing OSI PI



RESEARCH & DEVELOPMENT

Process and Product Development

- Economic-directed research
- Radical process innovation & synthesis
- Process & plant improvement
- Product & prototype development & testing
- “Green” chemistry & environmental solutions

Separations Technologies

- Distillation, crystallization, membranes, simulated moving bed, other advanced techniques

Catalysis

- Substrate design
- Reaction engineering
- Catalyst design, scale-up, testing & modeling

Process Pilot Plants

- Pilot plant construction, scale-up, development



TECHNICAL ENGINEERING CAPABILITIES

Process Package Development

- Techno-economic Analysis & Feasibility Studies
- Technology Licensing Support
- Technology M&A Support
- Front-End Loading, FEL 1 – 2

Process Optimization, Process Improvements and Operational Excellence

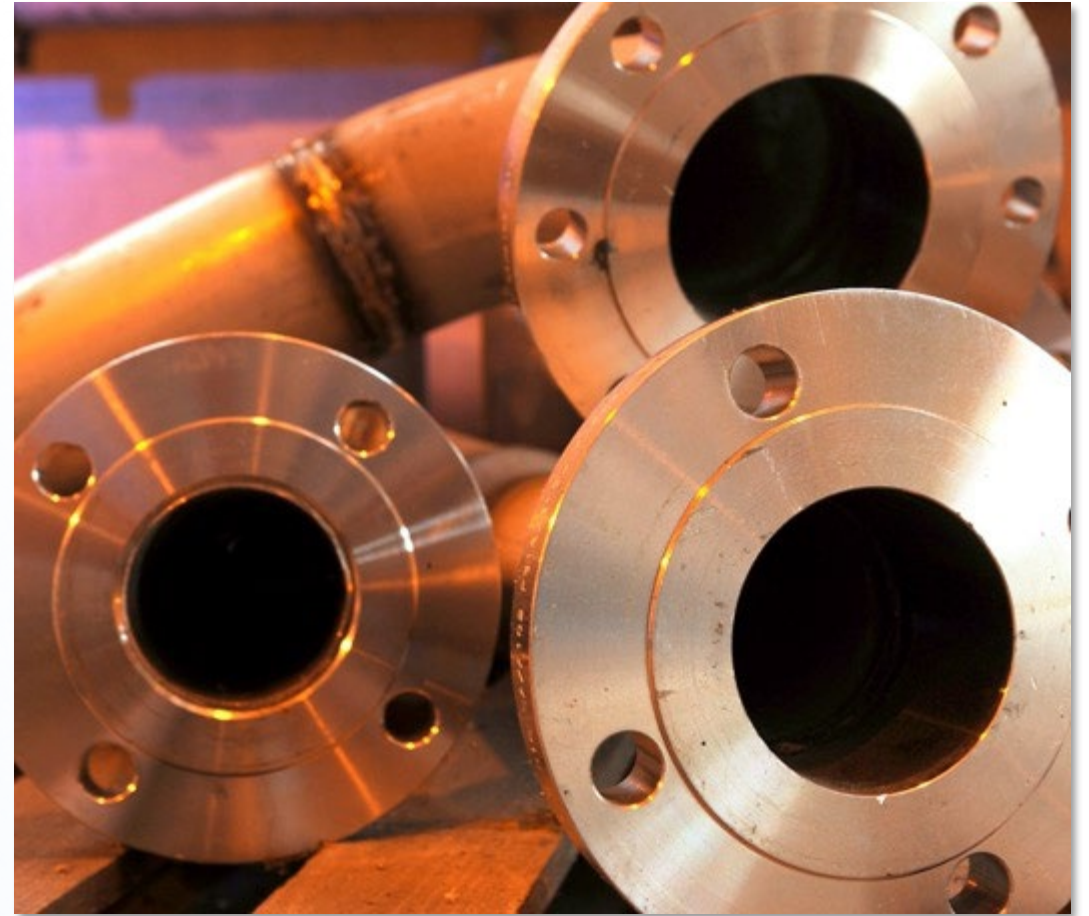
- Problem Solving techniques: SPC/SQC, Experimental Design, Kepner-Tregoe and Six Sigma
- Process commissioning & start-up support
- Process control & automation
- Process and plant improvement



MANUFACTURING

Specialty & Custom Manufacturing

- Process development expertise and production facilities to on-shore advanced materials
- Growing a robust custom manufacturing base of operation in our South Charleston, WV location
- Facilities
 - Small-scale continuous and batch processing equipment available now
 - Mid to large-scale facilities and equipment coming on-line this year



AVN PROCESS CAPABILITIES

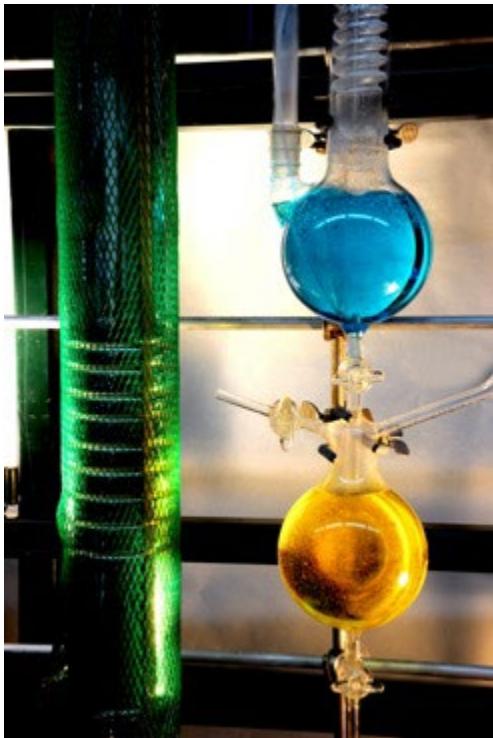
We have a rare and diverse intellectual infrastructure, and we involve multidisciplinary teams early in projects.

- We have unique, flexible facilities, which increases the speed to start projects or change direction.
- We have unique infrastructure, highly experienced staff, excellent crafts support internal and local, and an inventory of commonly used equipment.
- If we do not have process equipment in place to immediately run a particular process, we have the skills and contacts to customize a process for your purposes and to bring it online quickly.
- The combination of lab, pilot and commercialization means our clients can engage with AVN as their partner of choice at any and all stages.



SUMMARY

AVN is a rapidly expanding organization conducting high-value-added, market-driven projects for a variety of global customers in R&D, engineering, and manufacturing.



- Experienced management team and world-class research staff.
- Excellent lab and pilot facilities and significant equipment available.
- State-of-the-art engineering tools and processes.
- Specialty & custom chemical manufacturing capabilities.
- Unique approach to intellectual property

CONTACT US

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