

SOCMA Show

AVN Overview

February 19-21, 2025





THE AVN ADVANTAGE

AVN provides an uncommon combination of services to the chemical industry, including:

- Contract Research & Process Development
- Pilot Plant Design and Operation
- Specialty and Custom Chemical Manufacturing

The combination of these services allows our clients to engage with AVN as their partner of choice at any and all stages of chemical process development and operation.





THE AVN ADVANTAGE— Customer Perspective

AVN provides uncommon expertise, infrastructure and work processes that enable our clients to:

- Develop, design and deploy technologies, allowing them to meet mission critical objectives
- Accelerate technology development and rapidly adapt to business and technology evolution
- Advance difficult chemistries and mitigate risks around new technology deployment
- Maintain full ownership of their intellectual property rights

Customer Perspective:

“Working with you all has been one of the best experiences of my career. The innovative spirit you all brought to the project is truly unique.”



ABOUT AVN

Research and development corporation formed in 2004:

AVN Corporation acquired MATRIC assets in late 2022

Offices in Charleston and Morgantown, West Virginia

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

Actively expanding into specialty and custom manufacturing

R&D and Engineering staff of over 100 professionals:

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



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
- Two new community college facilities
- Renovation of major laboratory facility



AVN FACILITIES

R&D Labs: Building 740

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

Intermediate Scale Research: Building 770 Annex

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

Piloting and Manufacturing: Building 771

- High-pressure and reactive chemical cells
- Pilot facilities and small-scale manufacturing
- 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
- AVEVA PI data historian also provides secure, remote real-time data access



RESEARCH & DEVELOPMENT

Process & Product Development

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

Separations Technologies

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

Reactor & Catalyst Technologies

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

Process Pilot Plants

- Pilot plant construction, scale-up, development & demonstration
- Product manufacture for testing, market development



TECHNICAL ENGINEERING CAPABILITIES

Process Package Development

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

Process Optimization, Process Improvements and Operational Excellence

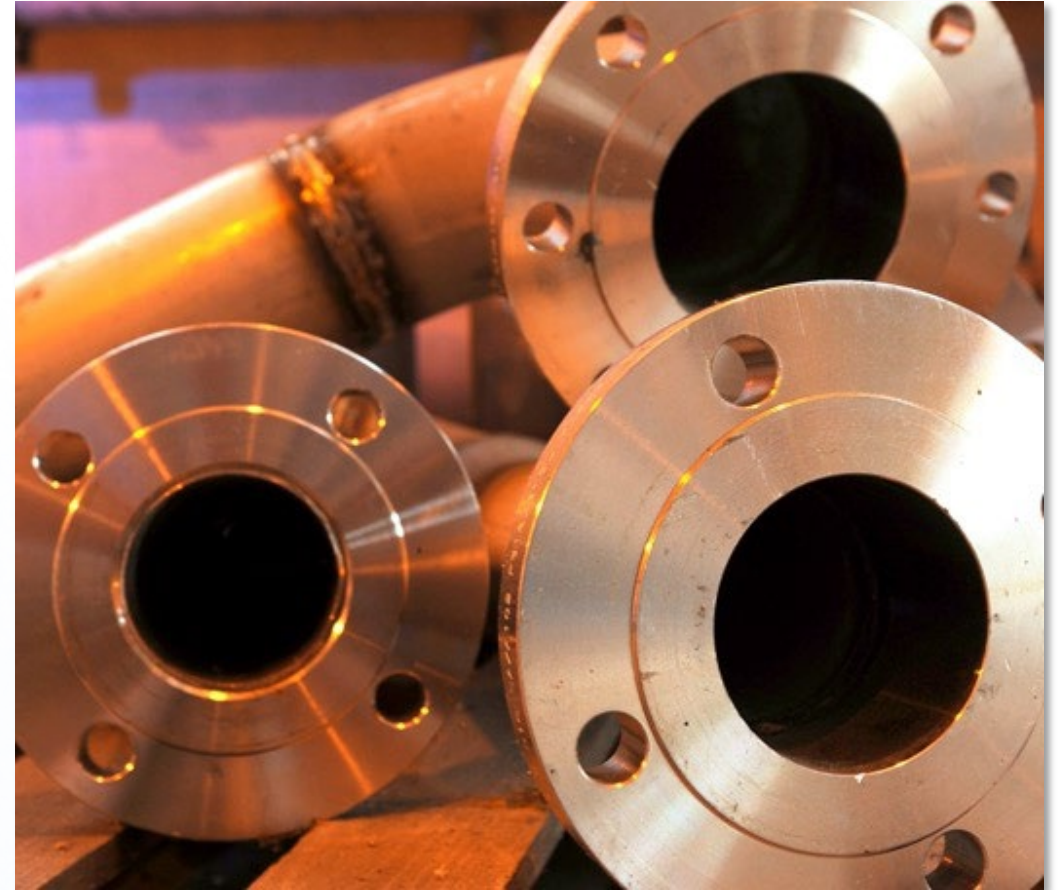
- Problem Solving techniques: SPC/SQC, Experimental Design, Kepner-Tregoe and Six Sigma
- Process commissioning & start-up support
- Process control & automation
- Process and plant improvement



MANUFACTURING

Specialty & Custom Manufacturing

- Growing a base for custom manufacturing in South Charleston, WV
 - Continuous or batch processes
- Ability to leverage AVN's uncommon technical expertise when appropriate for value-added support
- Strategic targets:
 - On-shoring critical materials
 - Scaling difficult chemistries
- Facilities:
 - Continuous and batch processing equipment available and configurable
 - Batch up to 360-gallon reactors and 1000 psig
 - Process automation
 - Emission destruction devices
 - Industrial wastewater treatment
 - Facility siting for challenging chemistries and operating conditions
- Open to discussing strategic relationships for long term manufacturing





AVN CAPABILITIES

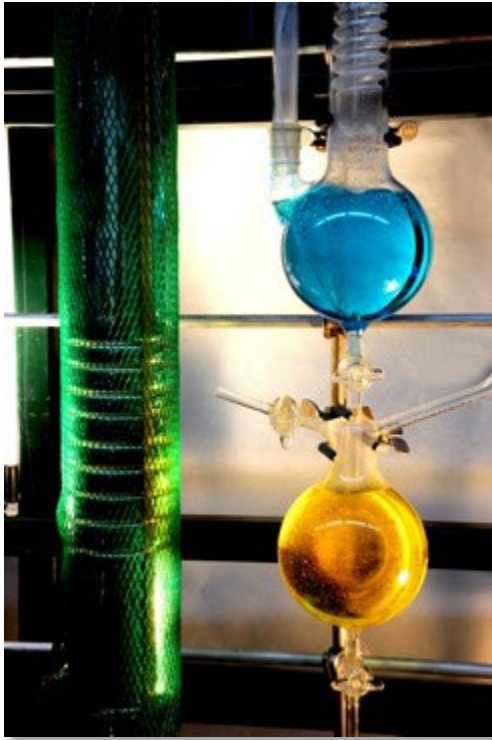
We have diverse set of intellectual skills and extremely capable facilities and infrastructure.

- We have a highly experienced staff, ready infrastructure, and excellent internal and local crafts support
- Expertise in working with difficult processes and chemistries
- We maintain an inventory of commonly used equipment for use
- If we do not have equipment available, we have the skills and contacts to quickly obtain custom equipment for your purposes



SUMMARY

AVN is a rapidly expanding organization focused on market-driven results working 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 ownership

CONTACT US

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