

WHAT IS MICROCLIMATE CONDITIONING?

Provides cooling or heating to the body to enhance performance and prevent injury.

A MICROCLIMATE COOLING SYSTEMS IS:

A garment and/or device worn by the individual to reduce thermal burden associated with physical activity, temperature, solar load, humidity while on maneuvers or encapsulated in protective clothing.

APPLICATIONS:

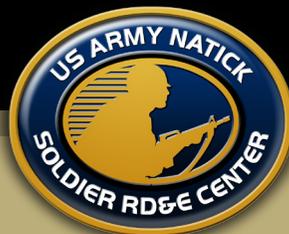
- Military
- Medical
- Emergency Response
- Commercial



**"WITHOUT COOLING,
HE'S A CASUALTY!"**



**"WITH COOLING,
HE'S A WARRIOR!"**



US ARMY NSRDEC TECHNOLOGY, SYSTEMS & PROGRAM INTEGRATION DIRECTORATE

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MICROCLIMATE CONDITIONING CAPABILITIES

Expertise in Personal
Cooling & Heating



MICROCLIMATE CONDITIONING CAPABILITIES

EXPERIENCE:

Since 1982, Natick Soldier RD&E Center (NSRDEC) has been in the forefront of the development of microclimate conditioning systems for military use. Our expertise is recognized through serving in a consultant and development capacity to other government agencies, civilian organizations, and academia. With a team that consists of mechanical and chemical engineers, textile technologists, clothing designers, test and evaluation engineers, physiologists, and acquisition specialists, NSRDEC provides all the necessary services for any aspect of microclimate conditioning.

CAPABILITIES:

A combination of expertise and state-of-the-art facilities affords NSRDEC the ability to conduct all aspects of research and development (R&D) for microclimate conditioning systems. We are an independent evaluator for assessing the latest available technologies.

- Identification of available technology and integration into existing systems
- Laboratory and human evaluation of systems and component performance
- Modification of off-the-shelf systems to meet customers' needs
- Development of innovative conditioning systems
- Investigation of novel technologies for special applications
- Program management from conception to culmination

EXPERTISE IN:

- Active and Passive Air Ventilation Systems
- Closed Loop, Liquid Circulating Microclimate Cooling/Heating Systems
- Phase Change, Vapor Compression, Adsorption, Thermoelectric Technologies
- Development of Cooling Garments
- Human and Platform Integration of Microclimate Cooling Systems
- Test and Evaluation of Microclimate Cooling Systems

RECENT ACCOMPLISHMENTS:

- Development of a Microclimate Cooling Garment for U.S. Army helicopter air crew (Air Warrior)
- NSRDEC test method used as the basis for an ASTM standard for evaluating Microclimate Cooling Systems on a thermal manikin
- Worked with OGAs and industry partners to develop/integrate a Microclimate Cooling System for HMMWVs
- Worked with an industry partner to develop a Body Ventilation System

PARTNERSHIPS IN R&D:

- US Army Research Institute of Environmental Medicine (USARIEM)
- US Army Program Executive Office Soldier (PEO Soldier)
 - US Army Product Manager Air Warrior (PM Air Warrior)
- US Army Tank-Automotive and Armaments Command (TACOM)
- US Army Tank-Automotive Research, Development and Engineering Center (TARDEC)
- US Navy Clothing & Textile Research Facility (NCTRF)
- Technical Support Working Group (TSWG)
- National Institute of Justice (NIJ)

