



Argonne is a multidisciplinary science and engineering research center, where talented scientists and engineers work together to answer the biggest questions facing humanity, from how to obtain affordable clean energy to protecting ourselves and our environment.

# NEXSAN UNITY™ DELIVERS IN SUPPORT OF ATMOSPHERIC RADIATION MEASUREMENT PROGRAM FOR ARGONNE NATIONAL LABORATORY

## SUMMARY

After experimenting with home-grown solutions, Argonne National Laboratory selected Nexsan Unity systems in support of the Atmospheric Radiation Measurement ([www.arm.gov](http://www.arm.gov)) Program. Several Unity systems with a total combined capacity of over 1PB are deployed in environmentally challenging locations, from ships to generator-powered data centers in remote corners of the world, collecting valuable climatological data for the U.S. Department of Energy. Nexsan Unity has proven to be stable and reliable in unpredictable environments, delivered density and capacity in tight spots, and give the performance required at a value no other vendors could approach.

## ABOUT ARGONNE NATIONAL LABORATORY AND ARM

Located in Argonne, IL, Argonne National Laboratory is a multi-disciplinary science and engineering research center committed to answering some of the toughest questions facing humanity, including new ways to develop energy innovations through science, create novel materials molecule-by-molecule, and gain a deeper understanding of our planet, our climate, and the cosmos. Argonne's 14 research divisions and 5 national scientific user facilities collaborate with scientists around the world to explore, understand, and better the world we live in. The Atmospheric Radiation Measurement Climate Research Facility is a Department of Energy funded program that has been operating climate measurement sites around the world for over two decades. Operating in a wide variety of locations, including aboard ships, remote locations in the arctic, and other areas, ARM aims to measure any and all types of climate information imaginable, from wind, soil, cloud physics, precipitation, and more.

## THE CHALLENGE

ARM facilities are in remote areas of the world and frequently have inhospitable conditions. There are no plush data centers with clean power and steady air conditioning, rather these are sites such as sea containers or remote locations powered by generator, and subject to power outages, dirty power, extensive vibrations, and temperature fluctuations. All systems must be able to stay online in these adverse conditions while collecting data at a rate from 4K to 4GB per hour from a variety of climate instruments.



600 Hillgrove Avenue  
Western Springs, IL 60558

708-784-1500  
[www.usicorp.com](http://www.usicorp.com)

//  
Nexsan devices meet our needs in the field. We have never had an instance with Nexsan that caused serious failure or downtime.”

**CORY STUART**

ARM SITE DATA SYSTEM AND  
CYBER SECURITY MANAGER  
ARGONNE NATIONAL LIBRARY



600 Hillgrove Avenue  
Western Springs, IL 60558

708-784-1500  
www.usicorp.com

### Requirements

- Highly reliable, durable systems for extreme environments
- Redundant components for no single point of failure
- Ability to expand to hundreds of TB but within as little rack space as possible
- Performance to keep up with multiple streams of data input from a variety of instruments
- Replication and NFS exports
- If forced offline, ability to restart at point where power dropped

### ALTERNATIVES AND SOLUTION SELECTED

Initially, the team designed and built home-grown storage systems but these proved to be expensive, difficult to operate, and unreliable. They considered systems from other vendors but they all proved too expensive, slow, or missing features.

Nexsan was deployed in 7 locations with a total of 1PB of raw capacity. Easy to configure and deploy, the systems only took a very short time to get up and running.

### Nexsan Drive and System Burn-in Process

Nexsan has a time-tested drive qualification and burn-in process, which includes extensive engineering evaluation of drives and their firmware updates, plus thorough evaluation of drive behavior during the manufacturing process. Few manufacturers these days test drives in the systems in which they are sold, but Nexsan always has and finds this to be critical to driving down field failure rates.

### Results include:

- Networked systems performance as good as direct connect
- High capacity with high density met requirements to fit into the limited rack space; other vendors required 20U and Nexsan delivered in 12U
- Performance has surpassed their application needs of massive input from a variety of climate instruments
- Highly stable systems in the most extreme environments
- Nexsan offered the best value of all competing systems

“Nexsan devices meet our needs in the field. We have never had an instance with Nexsan that caused serious failure or downtime,” said Cory Stuart, ARM Site Data System and Cyber Security Manager.