

The Complete Mobile Nitrogen Supply Chain

Generating, boosting, and distributing high-pressure nitrogen on a single deployable platform.

System:

UGSSN2 Nitrogen Generation, Charging & Distribution Vehicle

Core Technology:

PSA Nitrogen Generation from Atmospheric Air

Storage Pressure:

350 Bar / Multi-Point Distribution



Turning Nitrogen Servicing into a Line-Maintenance Task

Cylinder-based nitrogen servicing ties operational readiness to a rigid re-supply schedule. The UGSSN2 removes this constraint. It generates high-purity nitrogen on-demand from ambient air, boosting and storing it at operating pressure.

The output is traceable nitrogen delivery: not a cylinder-swap, but a continuous supply chain independent of logistics.



The Logistical Pivot: Eradicating the Cylinder Chain

The Cylinder Chain

Dependency

Relies entirely on scheduled external cylinder deliveries.

Hazard Profile

Introduces multiple high-pressure vessels onto the active flight line.

Downtime

Aircraft readiness is bottlenecked by the availability of pre-charged ground equipment.

The UGSSN2 Chain

Independence

On-demand generation from atmospheric air using PSA technology.

Safety

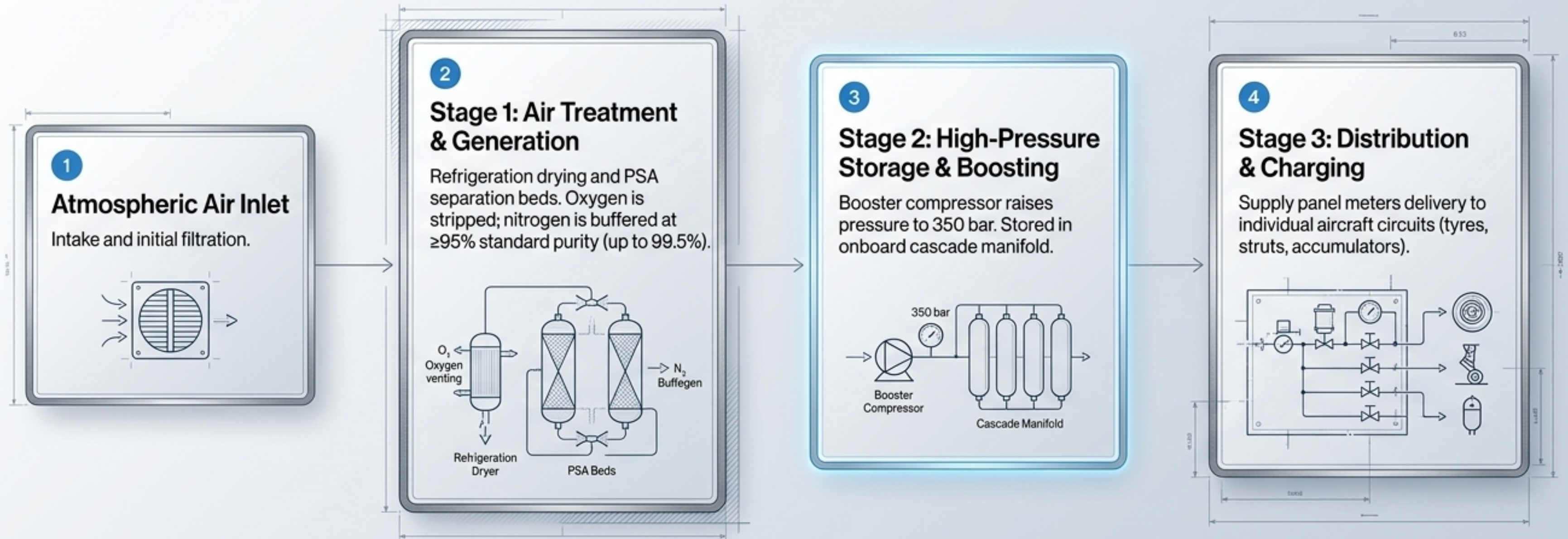
Self-contained system with panel-mounted indicators and individual isolation valves.

Readiness

Nitrogen is held in a 350-bar onboard manifold. No ramp-up delay when an aircraft is on stand.

System Architecture:

The Air-to-Aircraft Arc



Module Anatomy: Stage 1 Generation Pipeline

Refrigeration Dryer (SMC IDFA75E)

Removes moisture, protecting PSA bed life and final product purity.

PSA Separation Module

Carbon molecular sieve beds cycle under pressure to isolate nitrogen.

Product Buffer Vessel

Holds separated nitrogen before transfer to the booster inlet.

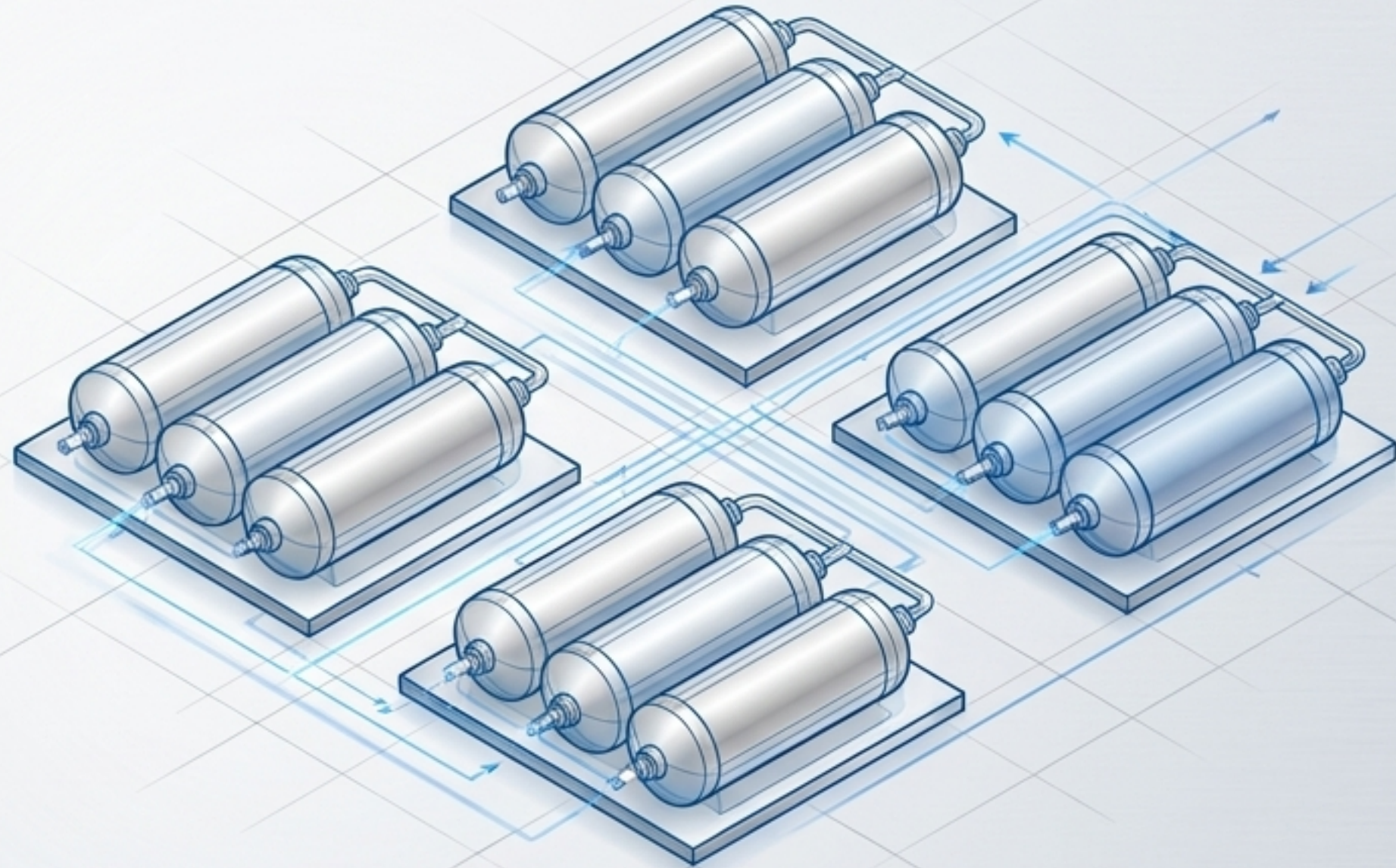
Filtration Train

Multi-stage coalescing and particulate filters remove oil aerosol and submicron debris.



High-Pressure Architecture: 350 Bar Readiness

Once generated, nitrogen is transferred to the onboard boosting section. An electrical/pneumatic booster compressor (10:1 minimum ratio) aggressively raises the system pressure, holding it in reserve.



Storage Capacity



640 Liters @ 350 Bar

Manifold Design



16 integrated cylinders (40 liters each) in a divided, interconnected 4-section cascade.

Pressure Ratings



Inlet (0 to 350 bars) | Output (350 bars) | Reject (35 bars).

Module Anatomy: Precision Supply & Distribution

Instrumentation Array

≥12 dedicated pressure gauges displaying storage manifold and individual circuit pressures.



Isolation Capability

Individual circuit isolation valves allow taking specific lines offline without interrupting the wider distribution network.

Safety Redundancies

High-pressure relief valves integrated across storage and distribution paths.

Regulated Circuits

Independent outlet valves for multiple, simultaneous aircraft charging stations.

The Mobility Platform: Deployable Ground Support

Utility Vehicle Base

Self-propelled tow unit featuring Miller Auto Body construction, specialized equipment cabinets, and canopy.

Chassis Dynamics

Low-bed tandem-axle trailers designed for tight hangar turning radii and rough field dispersal positions.



Operational Stabilisation

Equipped with deployable outrigger legs and forged tow-eye hitches for secure, multi-vehicle convoy linking.

Environmental Lighting

Integrated LED work lights for night operations at the distribution end.

Forward Operations: Multi-Platform Capability



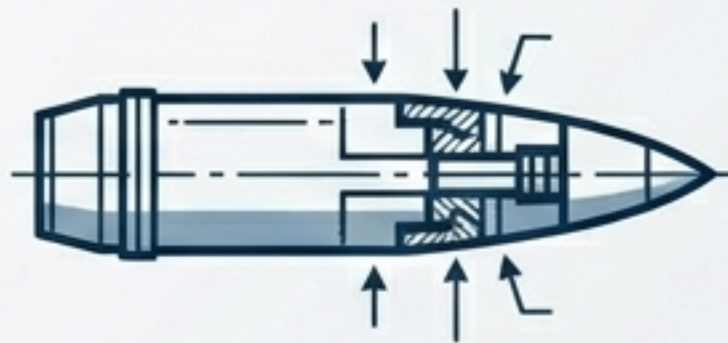
Fighter & Trainer Aircraft

Tyre inflation, main/nose landing gear strut charging, and hydraulic accumulator top-ups between sequential sorties.



Transport & Rotary Wing

Sequential or simultaneous servicing of high-volume nitrogen demands across heavy-lift platforms.



Ammunition & Fuze Systems

Supply of dry, high-purity ($\geq 95\%$ up to 99.5%) nitrogen for fuze purging and inert-atmosphere requirements.



Field & Dispersal Operations

Full off-grid deployment to temporary flight lines, operating independently of fixed infrastructure or ground power.

Technical Specifications Dashboard

Operating Environment		Generation Capability		Storage & Boosting	
Temperature Range:	-20°C to +55°C	Flow Rate:	400 Liters (±5%) in 10 hours	System Pressure:	350 Bar
Relative Humidity:	Up to 100%	Output Purity:	99.5% standard configuration	Storage Volume:	640 Liters total (16x40L cascade)
Altitude:	Up to 3,500m above sea level	Dew Point:	-65°C @ 150 kg/cm ²	Booster Ratio:	10:1 Minimum
Resistance:	Rated for heavy rain and salt fog (sealed operation).	Filtration:	0.01 Micron (inlet and outlet) with clogging indication.	Power Source:	Vehicle engine or integrated battery system.

Engineered Pedigree: 20 Years of Defence Excellence

The UGSSN2 is backed by two decades of aerospace and mechanical engineering mastery. Built by an elite team of over 100 graduate engineers, led by visionary founders from IIT Kanpur and IIT Delhi.

Quality Assurance

Accredited by DGAQA and DRDO.



Active Deployment

Systems currently powering operations across every Indian Air Force station.



Institutional Trust

Expanding footprint across the Indian Army, Navy, ISRO, and major aeronautical ministries.

Blueprint to Deployment: Commissioning Your System

- ✓ Onboard PSA nitrogen generation & 350-bar storage modules.
- ✓ Self-propelled utility tow vehicle and tandem-axle trailers.
- ✓ Quick-connect charging hose sets and spare filter element kits.
- ✓ Full pneumatic/electrical circuit diagrams & field maintenance manuals.
- ✓ Machine identification plate (M/C No. A2700 Series).
- ✓ Custom purity grades, distribution counts, and vehicle bases built to operational requirement.

