

Focus on Reliability

IN OXYGEN THERAPY

The cost of **unreliable oxygen therapy equipment**

Like any medical equipment, oxygen concentrators can break down or fail to operate correctly. Oxygen concentrator failure can impact patient outcomes and their healthy emotional state, is costly to providers, and disconcerting to prescribers.

► **Impact on patient care**

Equipment that fails or signals error messages can create anxiety for patients and a cessation in their treatment, a concern for patients, caregivers and prescribing physicians.



► **Maintenance costs for medical equipment dealers and service providers**

Over its lifetime, an oxygen concentrator requires both an initial cost and a number of continuing operating costs.

Initial investment. The upfront costs for medical devices can mean a significant investment. Providers rely on those investments to generate revenues for ongoing operations.

Unplanned Service Dispatches. When a device goes down, it means sending a technician to investigate, repair or replace the unit, and return units to the servicing location.

Costs of backup/redundant equipment. The fear of broken units creating lapses in patient therapy means that providers often employ a fleet of “backup units” to replace devices that go down in service.

► **Customer service and sales costs for medical equipment dealers and prescribers**

Valid service calls from patients and caregivers. Each telephone call or email message from a patient or caregiver has to be monitored and reacted to 24/7 to ensure that there is no cessation of service. That can require staff or answering services plus trained technicians ready to go at a moment's notice.

"False alarm" calls from patients and caregivers. Patients and caregivers can misunderstand labels and instructions on the device or user manual, leading to unnecessary visits to the patient location.

Concerns from prescribers. Physicians talk to their patients and caregivers. They are concerned about compliance and efficacy of treatments, and ask questions when patients are not responding as expected. When equipment proves problematic, or providers don't respond quickly enough, it increases the possibility that prescribers will refer patients to other providers and/or different devices.



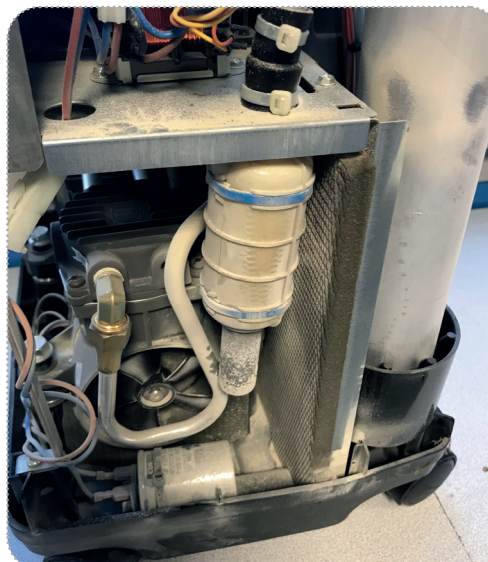
The need for **increased reliability**

In developing the next generation of oxygen concentrators, Invacare discussed market conditions with providers and healthcare professionals to understand their greatest needs. Chief among their concerns: Providers increasingly said they were impacted by downtime, service costs and the need to replace equipment before its promised life expectancy.

Invacare identified two common problems that can create downtime for patients and providers:

► **Sieve bed failures** caused by high air velocity and moisture contamination. Sieve beds, the component in concentrators which converts room air into oxygen, lose efficacy when too much airborne moisture becomes entrapped inside. Further, the breakdown of material in sieve beds due to air flow and pressure can create a messy issue known as sieve dusting.

► **Internal heat buildup**, due to the lack of adequate cooling system, which can lead to the breakdown of compressor seals and reduced performance of internal components.



Reliability from the start

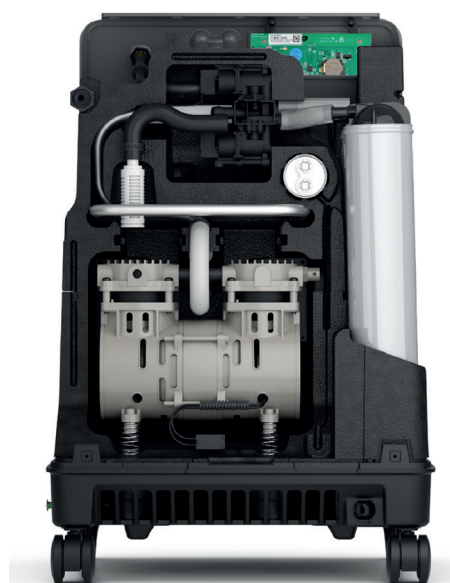
Invacare's new **Platinum 5NXG** oxygen concentrator was designed to address these reliability challenges. Two areas of focus for Invacare—extending sieve life and reducing damaging heat build-up— can help contribute to better reliability and service life of critical components.

► Target: Extending Sieve Life.

Sieve material is sensitive to two forces: the constant pounding of compressed air into the cylinder through tiny orifices resulting in high velocities, and exposure to moisture from room air.

To address these issues, engineers at Invacare studied failures of sieve beds over time. The result was a holistic reimagining of the sieve beds and the process of extracting oxygen from room air.

Platinum 5NXG oxygen concentrator introduces a patent-pending advanced sieve system called the *Invacare® SieveGard+™* Advanced Sieve System that is designed to reduce destructive forces created by high-velocity, turbulent airflows from the compressor to the sieve beds. Invacare's unique, patent-pending honeycomb filter improves airflow while reducing destructive pressures. It includes an inverted pneumatic architecture, and a consolidated valve configuration that addresses moisture contamination during non-use times. Every aspect of the *Invacare® SieveGard+™* Advanced Sieve System is designed for greater reliability, efficiency and longer life for the sieve beds.



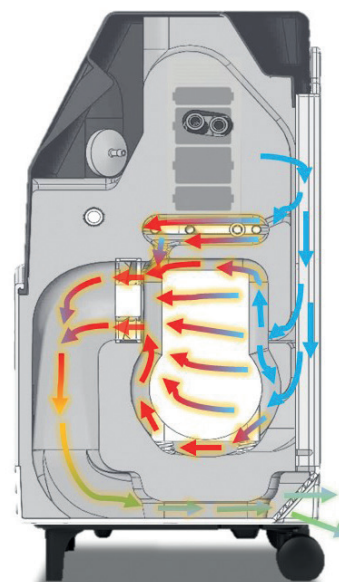
► Target: Eliminating Heat.

Heat does tremendous damage to a concentrator. Certain components—such as seals around compressors, hoses and tubing, valves and circuit boards—can fail over time from the excessive heat generated inside an oxygen concentrator.

Removing that heat as quickly and efficiently as possible was a primary design challenge for Invacare's engineering design team. It starts with the **Platinum 5NXG's** revolutionary and patent pending **Coolpressor™** Cooling System.

Utilizing unique inner shell design, **Coolpressor™** Cooling System routes air through and around the major heat-sensitive components. Powerful dual fans pull cool air across areas where heat would otherwise build up, then out through exhaust ports at the back.

Coolpressor™ minimizes heat build-up and provides a protective air-shield to critical interior components like compressor seals and other vital parts to help extend life and help prevent failures and performance degradation.



► **Our most reliable oxygen concentrator yet.**

True to its “Platinum” heritage, the **Platinum 5NXG** oxygen concentrator is designed to be a workhorse to help provide patients consistent, reliable and efficient oxygen supply and providers with low total cost of ownership (TCO).

In addition to extended sieve life and minimized heat build-up described above, there are many other improvements. Among others:

- Tough inner shell protects internal components from shifting and damage during movement and transportation.
- The simplified valve is designed to be less susceptible to failure, helps seal out sieve bed moisture and helps promote reliability.

Finally, **Platinum 5NXG** performance has been tested to comply with all technical and regulatory standards in force and with several thousands of hours confirming reliability from the start and in the long run.



Tel: (800) 668-2337 Invacare Corporation
www.invacare.com One Invacare Way
Elyria, Ohio
44035-4190

Tel: (800) 668-5324 Invacare Canada LP
www.invacare.ca 570 Matheson Blvd. E., Unit 8
Mississauga, Ontario
L4Z 4G4 Canada



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