Phoenix Controls

INCREASE THE RESILIENCE OF YOUR HEALTHCARE FACILITY

THERIS™ AIRFLOW CONTROL FOR HEALTHCARE FROM PHOENIX CONTROLS

Healthcare providers and countries worldwide continue to need a greater number of flexible, reliable patient rooms alongside other critical care and isolation spaces.

Drawing on 30 years of helping medical facilities improve air quality, Phoenix Controls has expanded its Theris™ Airflow Control family to help you increase flexibility and surge capacity – throughout your facility.

Expand your surge capacity with an added layer of protection: Cost-effective flexibility to isolate first-line, patient-care spaces on demand.

IMPROVE PROTECTION AND SURGE READINESS WITH PRECISE AIR QUALITY CONTROL

A GROWING NEED FOR PANDEMIC-READY ROOMS

Throughout the world, the COVID-19 pandemic has challenged the capacity of healthcare systems, with surges in demand straining or overwhelming many facilities.[1] And numerous experts predict that future pandemics are likely to rise in frequency and severity.[2]

This makes isolation and pandemic-ready rooms essential not only for daily healthcare management but also for readiness in the face of large-scale events.

A pandemic-ready room is a normal patient room – but when pandemic mode is needed, the room can be rapidly switched from neutral to negative pressure, isolating the space. This gives your facility a vital layer of added flexibility and protection.

DESIGNED FOR HEALTHCARE

The Theris family of venturi valves is designed to help healthcare facilities use directional airflow and pressurization to control room states – limiting the spread of airborne pathogens, improving indoor air quality (IAQ), and increasing room-state flexibility.

These capabilities have long been critical for isolation rooms, operating rooms, and compounding pharmacies. Now as concerns about airborne transmission increase, health guidelines are likewise expanding to meet those safety needs.

This means that a growing number of spaces – such as patient rooms, recovery rooms, and the emergency department – are increasingly seen as key spaces that need better airflow control.

And that's why Theris airflow control valves give you a versatile range of capabilities to meet and exceed today's published guidelines for IAQ and airflow control.

THERIS VENTURI VALVES

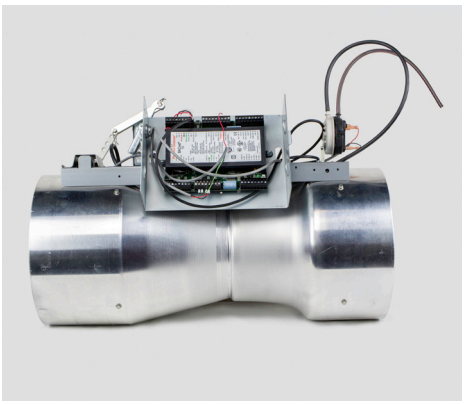
Over many years of proven results, our standard line of Theris valves have earned their reputation as the industry's premier choice for constant volume and variable air volume (VAV) applications where stable directional airflow into and out of the space is critical.

In VAV flow-tracking applications, the valve controller maintains an offset between the volume of air supplied into and exhausted from a space, to ensure reliable room pressurization and directional airflow.

Applications: Critical Protection

Protect your most critical spaces – those requiring airflow **accuracy within +/-5%** of the setpoint across the full flow and pressure range:

- Reduce infection risk by up to 88% in spaces that require asepsis, such as operating suites, burn units, and intensive care units.
- Maintain cascading pressurization to protect spaces such as airborne infectious isolation (AII) rooms, protective environment (PE) rooms, pharmacies, and labs.



THERIS FLEX VENTURI VALVES

Theris Flex valves offer a versatile, cost-effective way to introduce pressurization and directional airflow into sensitive spaces where such capabilities were not previously recognized as necessary.

The valve can be programmed to change room pressurization from neutral to negative to positive in response to the containment or isolation needs of a pandemic situation.

Applications: Extended Protection

Increase the overall resilience of your facility with first-line spaces that can quickly adapt to other needs – giving you airflow **accuracy within +/-10%** of the setpoint across the full flow and pressure range:

- Isolate spaces such as patient rooms or the ER department to quickly respond to contagion risks.
- Optimize energy use and sustainability where turndowns in unoccupied rooms are acceptable.

ENHANCE THE HEALTH AND FITNESS OF YOUR FACILITIES

ANALYTICS FOR CRITICAL SYSTEMS

Ensure critical spaces and building systems are ready when needed with real-time analytics and alerts.

Phoenix Controls Vision CE is an analytics dashboard that supplements your existing building automation system to help analyze and maintain proper management of operations, energy, and safety for critical environments within your facilities.

- Dashboard shows analysis of trends and key performance indicators (KPIs) such as air-change rate, energy efficiency, equipment status, and more
- Customize alarms, scheduling, and reporting – by campus, building, floor, and room
- Open-system design can monitor virtually any building systems and equipment

OPTIMIZE OPERATIONS & COSTS TOO

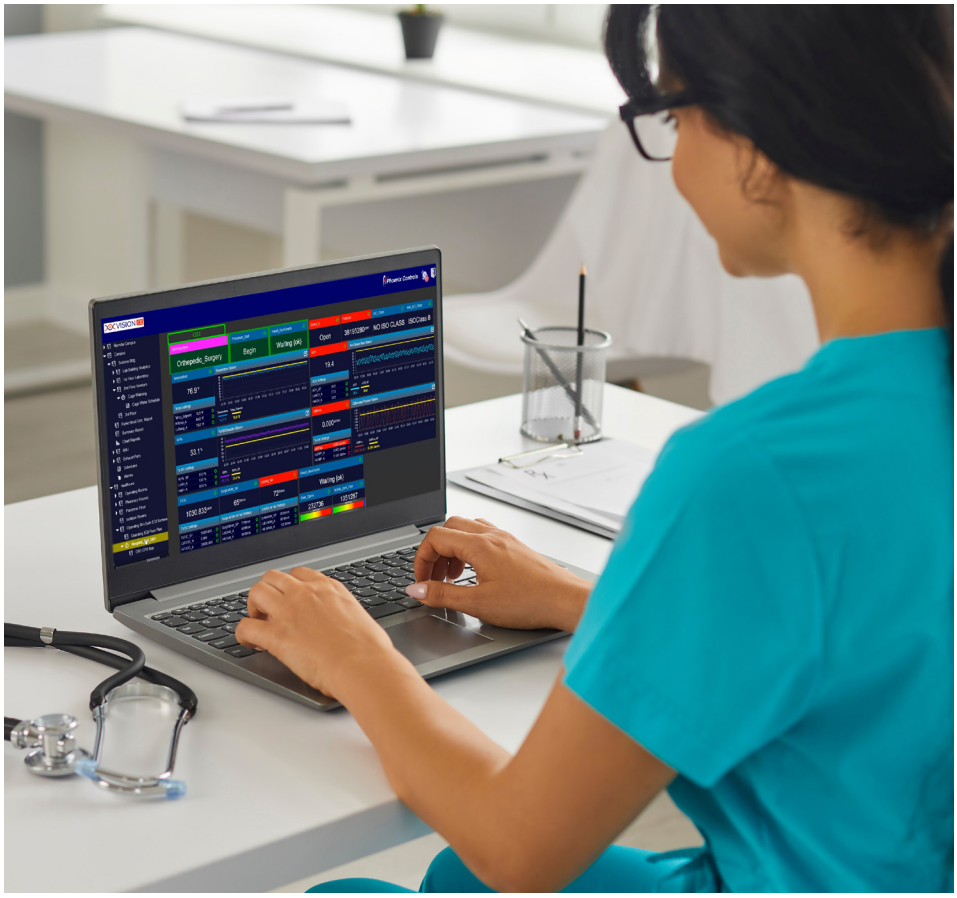
Precise Theris control improves more than airflow – it also helps streamline workflows and reduce facility costs.

Greater efficiency

- Ready your facility to adapt to fluctuating needs by rapidly switching modes as needed
- Reduce energy use: turndown ratios range from 10:1 to 20:1 for Theris valves, vs 3:1 for VAV boxes
- Use up to 30% shorter duct runs – accurate operation even with short or angled ductwork
- Lowest controllable pressure drop available
- HVAC system requires fewer controllers and dampers

Zero maintenance

- Preassembled and characterized at factory
- Preset accuracy eliminates balancing onsite
- Much faster commissioning and startup
- No flow sensors, no component drift or recalibration, no actuators to replace
- Incremental return on investment in less than 2 years



Better air quality

- Reduce risk of cross-contamination from pathogens and pollutants
- Consistent directional airflow minimizes dead zones of stagnant air
- Far more accurate than VAV flow measurement
- Precise control of circulation, temperature, and humidity

Onboard room controller

- Can be programmed with a pandemic mode for rapid room isolation
- Includes temperature controller for building zone applications
- Works with wall module for temperature / humidity input
- BACnet™ MS/TP enables customization and integration with virtually any building management system

WHY THERIS™ VALVES WORK

Mechanically pressure independent

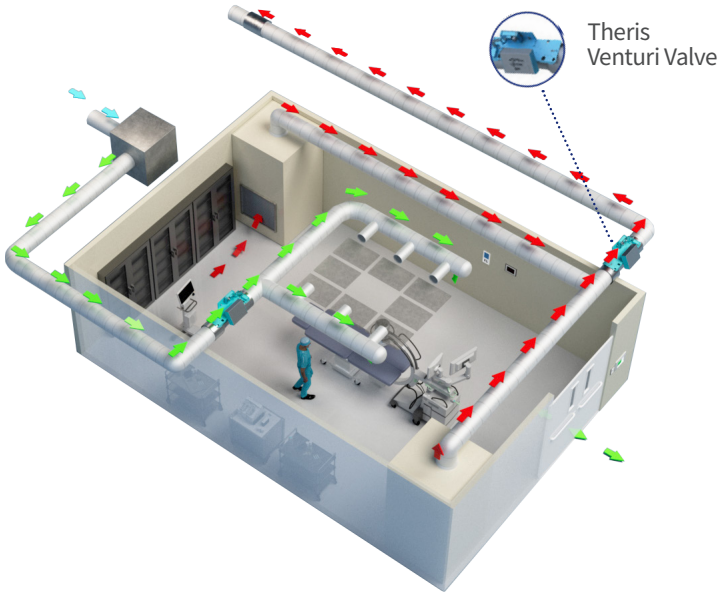
The Theris venturi valve houses a proprietary, high-grade stainless-steel spring inside the restrictor, enabling the valve to naturally react to static pressure changes inside the duct.

Unlike traditional VAV boxes, Theris valves require no labor to balance or maintain as they instantly adjust to changes in static pressure in less than 1 second.

OPERATING ROOM

Must maintain a sterile space for high-risk surgical procedures. Requires accurate air exchange and pressure to reduce infectious outcomes.

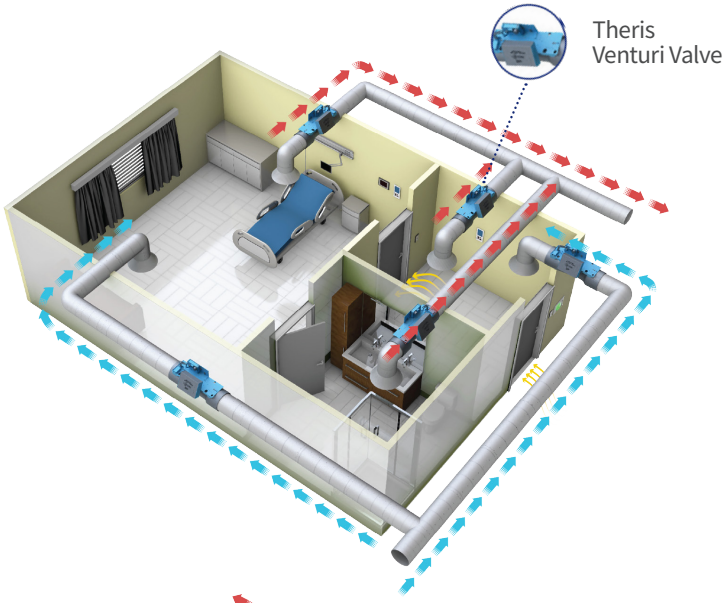
- **Pressure:** positive
- **Pressure rating:** minimum of 0.01 in. WC (inches water column)
- **Recommendation:** Theris venturi valve



ISOLATION ROOM

Designed to control and minimize the spread of infectious disease.

- **Pressure:** negative
- **Pressure rating:** minimum of 0.01 in. WC
- **Recommendation:** Theris venturi valve



PANDEMIC ROOM

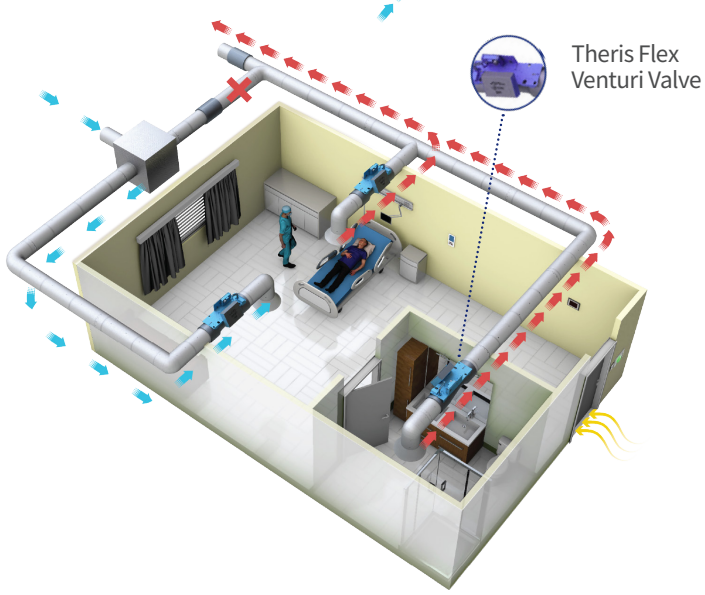
Normal patient room with limited requirements – yet when needed, it can be isolated.

- **Pressure:** switches from neutral to negative on demand
- **Pressure rating:** varies
- **Recommendation:** Theris Flex venturi valve

STEPS TO TRANSITION TO A PANDEMIC ROOM

Recirculation system changes to a 100% fresh air system.

1. Close return air damper
2. Open exhaust damper and switch on exhaust fan
3. Increase exhaust airflow at Theris Flex valve to create negative pressure
4. Increase make-up air in corridor to provide additional airflow offset



Outside Air
Exhaust Air
Recirculated Air
Room Offset

Theris valves work alongside the View Room Display, Temp/Hum Sensor, APM Room Monitor or Vista Monitor, and Pressure Ports to complete the Theris Solution.

RECOMMENDED THERIS APPLICATIONS

Inpatient and specialized outpatient spaces (based on ANSI / ASHRAE / ASHE Standard 170-2021, tables 7-1 and 8-1)

	FUNCTION OF SPACE – INPATIENT	PRESSURE RELATIONSHIP TO ADJ AREA	MIN TOTAL ACH	OCC/UNOCC TURNDOWN ALLOWABLE	RECIRCULATED AIR	MERV FILTER RATING	RECOMMENDED THERIS PLATFORM
NURSING UNITS AND OTR AND ER PATIENT CARE AREAS							
	AII Rooms	Negative	10	Yes	No	MERV-14	Theris TP/TX
	AII Ante Rooms	Negative	12	Yes	No	MERV-8	
	Operating Room(s)-ALL	Positive	20	Yes	No	MERV-16	
	NICU	Positive	6	Yes	No	MERV-14	
	Wound ICU (Burn Units)	Positive	6	Yes	No	HEPA	
	PE Room	Positive	12	No	No	HEPA	
	PE Ante Rooms	See 7.2.2				HEPA	
	Combination AII/PE Rooms	Positive	12	No	No	HEPA	
	Combination AII/PE Ante Rooms	See 7.2.2	10	No	No	HEPA	
	ER Dept	Negative	12	Yes	No	MERV-14	Theris Flex
	ER Dept – Trauma	Positive	15	Yes	No	MERV-14	
	ER Service Triage	Negative	12	Yes	No	MERV-8	
	Laser Eye Room	Positive	15	Yes	No	MERV-14	
	Pandemic Patient Rooms*	NR-Negative	12	Yes	No	MERV-14	
	Procedure Rooms	Positive	15	Yes	No	MERV-14	
DIAGNOSTIC AND TREATMENT							
	Bronchoscopy	Negative	12	Yes	No	MERV-14	Theris Flex
	Class 2 and 3 Imaging Rooms	Positive	15 – 20	Yes	No	MERV-14 to 16	
PATIENT SUPPORT FACILITIES (SUCH AS PHARMACY AND LAB WORK AREAS)							
		Contact local Phoenix Controls representative for details and guidance on this application.					

*Function of Space – Specialized Outpatient

HEALTHIER ROOMS START WITH CLEANER AIR

And cleaner air starts with better control – from Phoenix Controls

https://hwll.co/theris

Sources

1. Stone, Will. "A COVID Surge Is Overwhelming U.S. Hospitals, Raising Fears Of Rationed Care," National Public Radio (NPR), 5 Sept. 2021. Accessed 14 Dec. 2021:
https://www.npr.org/sections/health-shots/2021/09/05/1034210487/covid-surge-overwhelming-hospitals-raising-fears-rationed-care

   Herzlinger, Regina and Barak Richman. "Preparing Hospitals for the Next Pandemic," Harvard Business Review, 10 June 2021. Accessed 14 Dec. 2021:
https://hbr.org/2021/06/preparing-hospitals-for-the-next-pandemic

   McCabe, Ruth and Nora Schmit, et al. "Adapting hospital capacity to meet changing demands during the COVID-19 pandemic," BMC Medicine, 16 Oct. 2020. Accessed 14 Dec. 2021:
https://bmcmedicine.biomedcentral.com/articles/10.1186/s12916-020-01781-w

2. Smitham, Eleni and Amanda Glassman. "The Next Pandemic Could Come Soon and Be Deadlier," The Center for Global Development, 25 Aug. 2021. Accessed 14 Dec. 2021:
https://www.cgdev.org/blog/the-next-pandemic-could-come-soon-and-be-deadlier

   Penn, Michael. "Statistics Say Large Pandemics Are More Likely Than We Thought," Duke Global Health Institute, 23 Aug. 2021. Accessed 14 Dec. 2021:
https://globalhealth.duke.edu/news/statistics-say-large-pandemics-are-more-likely-we-thought

   Marani, Marco and Gabriel G. Katul, et al. "Intensity and frequency of extreme novel epidemics," Proceedings of the National Academy of Sciences, 31 Aug. 2021. Accessed 14 Dec. 2021:
https://doi.org/10.1073/pnas.2105482118

Additional resources

Wagner,Jennifer and Damon Greeley. "Analyzing ICU Patient Room Environmental Quality Through Unoccupied,Normal, and Emergency Procedure Modes: An EQI Evaluation," HERD: Health Environments Research & Design Journal, 10 June 2019 Accessed 16 Feb. 2022:
https://doi.org/10.1177/1937586719854218

Wagner,Jennifer and Damon Greeley. "Operating Room Improvements Based on Risk Prediction Can Help Reduce SSIs: Three Case Studies," AORN JOURNAL, 28 Oct. 2020. Accessed 16 Feb. 2022:
https://doi.org/10.1002/aorn.13224