

# Invisible Protection

## Clean Breathing Zone

A controlled air curtain forms an invisible barrier in front of the face, actively deflecting dust, overspray, and fine particles away from the breathing area.

## Extended Shielding Area

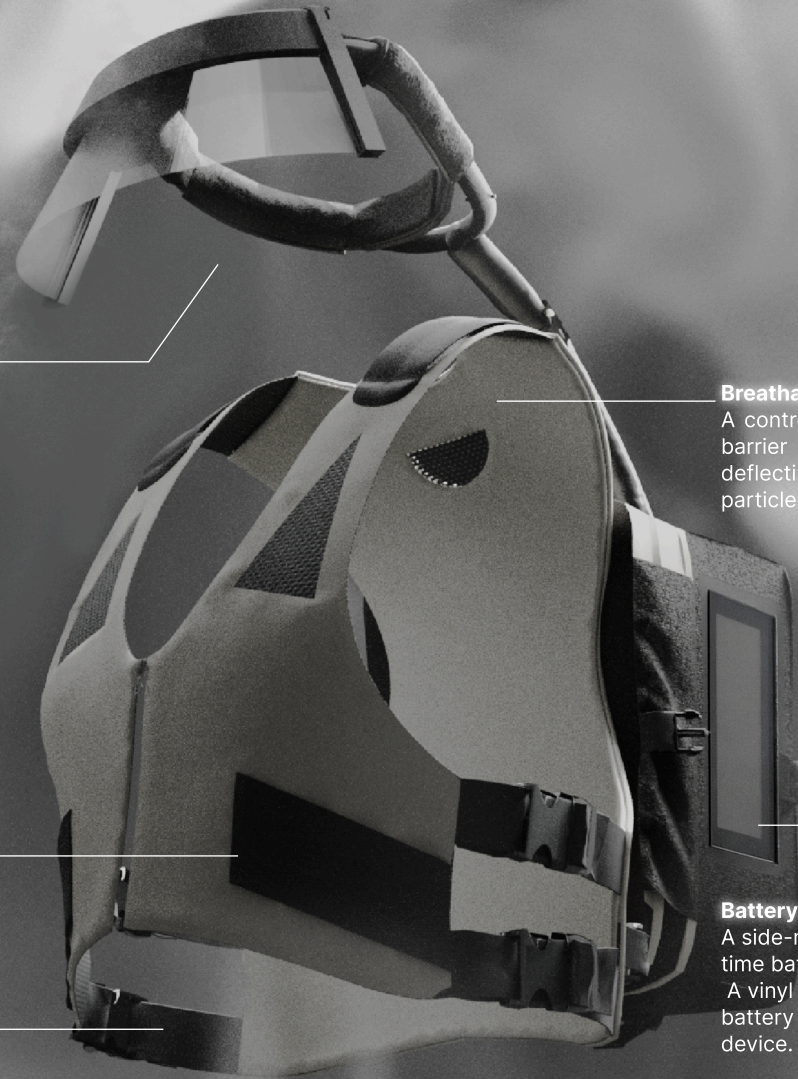
The airflow is engineered to push contaminants outward, creating a wider protective envelope that moves with the user.

## Integrated Tool Belt

A minimal waist-mounted tool system keeps essential items accessible without interfering with movement or workflow.

## Adjustable Waistband

Fully adjustable straps accommodate a wide range of body sizes, ensuring a secure fit and improved ergonomic support.



## Breathable Inner Padding

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## Battery Display & Side Access Port

A side-mounted display provides real-time battery status. A vinyl flap opens for quick charging or battery replacement without removing the device.



#### **Twist-Lock External Filtration**

This prototype features a fully external HEPA H12 filtration module secured with a twist-lock interface. The mechanism enables quick cartridge changes and eliminates the need to open the housing, minimizing downtime on the job site. External mounting also reduces thermal buildup inside the unit and preserves consistent airflow during prolonged use.

#### **High-Performance Air Intake**

The circular geometry of the intake increases filtration surface exposure while improving the uniformity of incoming flow.

#### **Expandable Bag for PPE Compatibility**

The backpack unit is designed with an expandable soft structure that accommodates all core components of the PPE system—including the garment, vest, and headpiece—within a single compact form. This ensures everything fits together seamlessly, making the setup easy to carry, store, and prepare for use.

#### **Ergonomic Wearability**

The structural harness evenly distributes load across the shoulders and torso. Soft, breathable padding reduces pressure points and heat accumulation, enabling all-day wearability for painters and construction workers.

# Where Air Becomes Armor.

# Designed for Active Tasks, Made for the Work You Do.

The model demonstrates how the wearable unit allows painters to carry tools comfortably while keeping the upper body unobstructed for sanding, drilling, or surface preparation.





# Deflect. Breathe.

## **Airflow Demonstration in a Dusty Environment**

This scene visualizes the protective airflow around the face during dust-heavy work, highlighting how the air curtain interacts with airborne particles.

This image was taken with a real model, but the face has been digitally altered with AI to protect privacy.

# Wear It. Forget It.

## **Headpiece Ergonomics and Hose Routing**

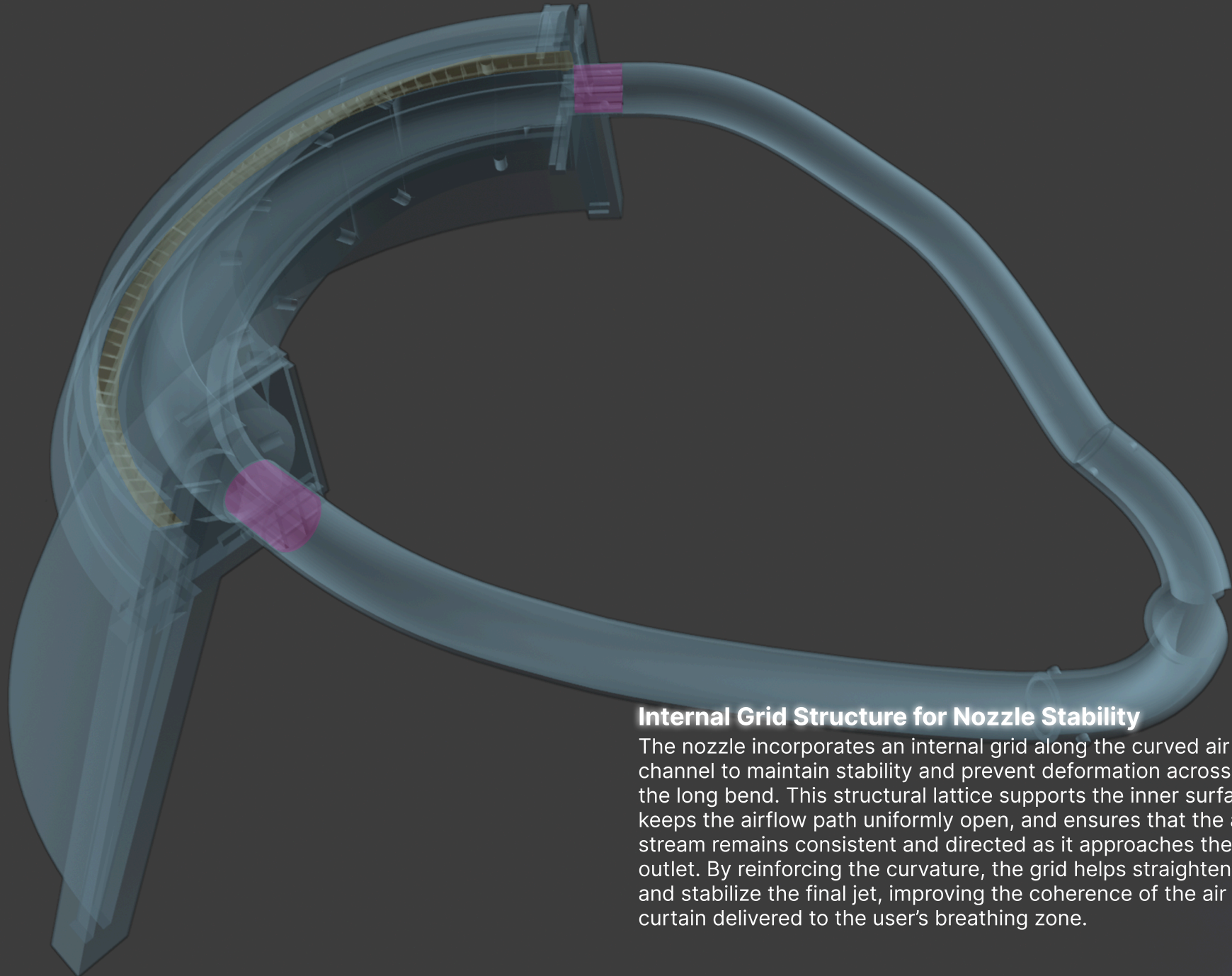
During sanding tasks, where fine airborne particles are generated continuously and in close proximity to the face, the air-curtain system redirects dust away from the user's breathing zone. This allows the painter to work comfortably and maintain clear visibility without relying on traditional tight-seal masks. The soft headband provides a secure, comfortable fit and was reported as comfortable by all users.



# Active Dust Deflection

During sanding tasks, where fine airborne particles are generated continuously and at close proximity to the face, the air-curtain system redirects dust away from the user's breathing zone. This allows the painter to work comfortably and maintain visibility without relying on traditional tight-seal masks.





### **Internal Grid Structure for Nozzle Stability**

The nozzle incorporates an internal grid along the curved air channel to maintain stability and prevent deformation across the long bend. This structural lattice supports the inner surface, keeps the airflow path uniformly open, and ensures that the air stream remains consistent and directed as it approaches the outlet. By reinforcing the curvature, the grid helps straighten and stabilize the final jet, improving the coherence of the air curtain delivered to the user's breathing zone.