



**Howden**

*The Future Of*

**V** VENTSIM™

**Revolving Around You™**

© Howden Group 2023



# Areas of Focus

Where Ventsim™ has progressed



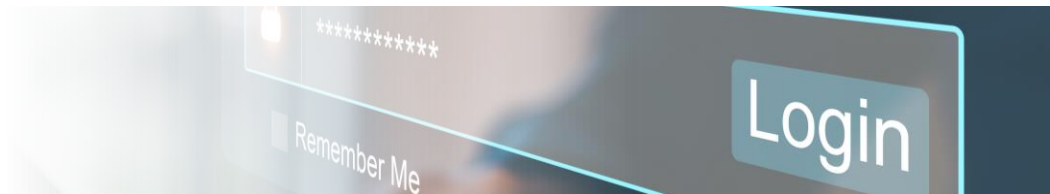
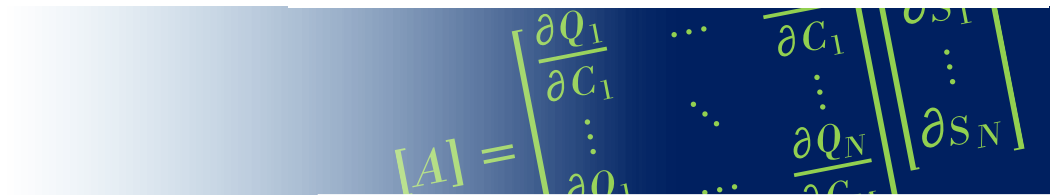
**High Blockage Piston Effect**

**Auto Calibration**

**Model in a Database**

**Web Portal**

**Seamless Software Integration**



# High Blockage Piston Effect

Understanding the difference

*Train, skip and ore passes  
**behave differently** to declines and  
adits, pending the type of traffic*

## Key differences:

- Vehicles consume majority of the void restricting airflow
- A vehicle's acceleration and deceleration has a variable impact on airflow, heat and gas



# Auto Calibration

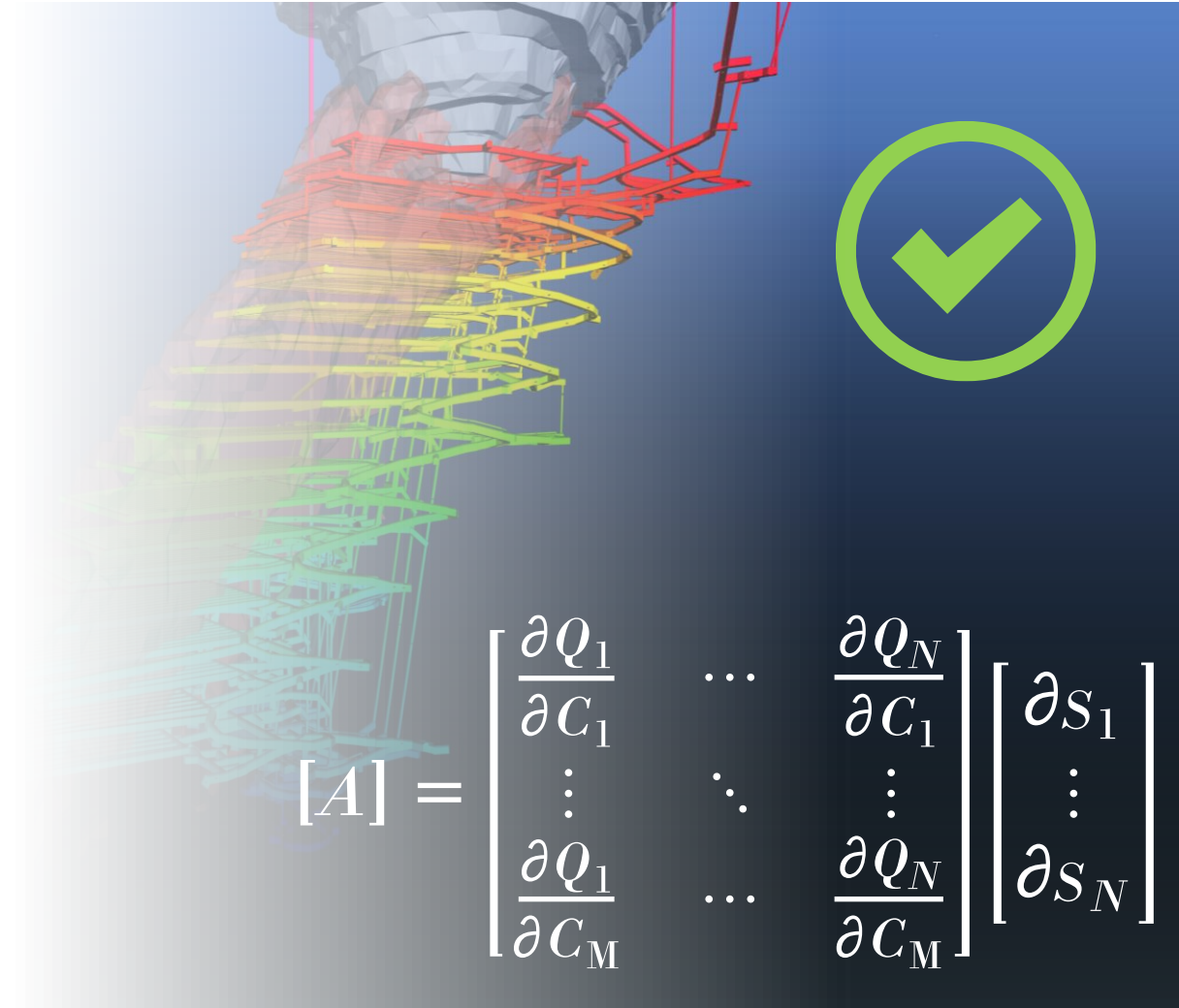
The importance of manual input

**An accurate Ventsim™ model will greatly enhance *future savings* in *millions of \$\$\$* across CAPEX and OPEX**

## Key Steps:

- User conducts a PQ survey
- Ventsim™ model is validated against PQ survey, as PQ survey is inputted into Ventsim™
- Auto calibration converges survey data with simulated

*...more accurate simulations*


$$[A] = \begin{bmatrix} \frac{\partial Q_1}{\partial C_1} & \dots & \frac{\partial Q_N}{\partial C_1} \\ \vdots & \ddots & \vdots \\ \frac{\partial Q_1}{\partial C_M} & \dots & \frac{\partial Q_N}{\partial C_M} \end{bmatrix} \begin{bmatrix} \partial S_1 \\ \vdots \\ \partial S_N \end{bmatrix}$$

*Mines will have a **single place** to store all Ventsim™ models*

## Key benefits:

- Easy to find the latest model
- Multiple people can edit simultaneously
- Changes tracked and a history recorded
- Changes can be undone
- Earlier revisions can be recalled

## Example:

- User 1 modifies section Alpha on one computer whilst User 2 works on section Beta on another computer.
- Whenever a user finishes their session, changes are merged to the master.



### ***Measurements straight from underground to your Ventsim™ models***

#### **Key benefits:**

- No need to type in data from underground when back on surface
- Get the data straight into Ventsim to compare and calibrate
- Color your model to highlight differences

#### **What will be coming up:**

- More smarts including flow balance
- Ipad/Android version



# Web Portal

Brings together support functions linked to software use

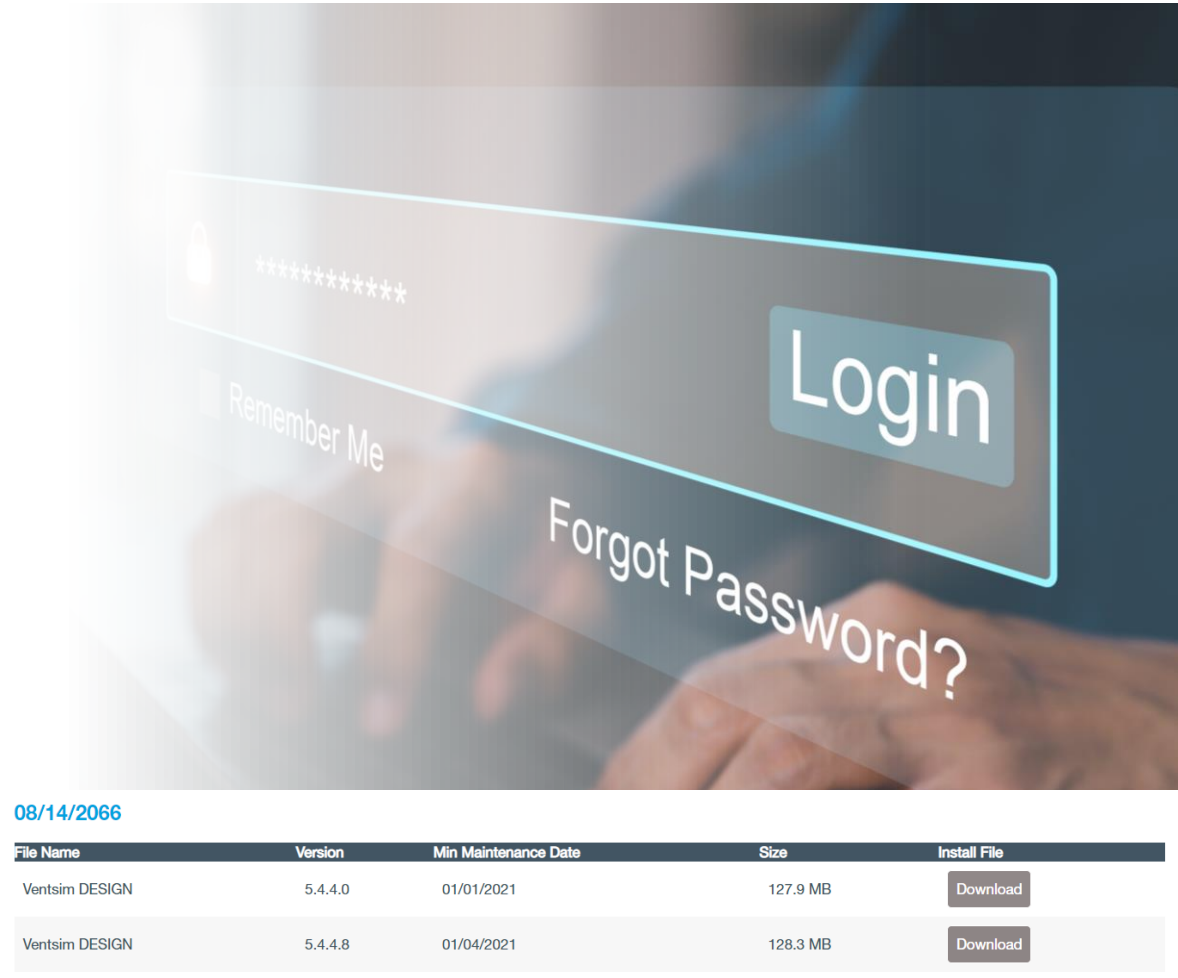


***A common place for all support functions of using Ventsim™***

## Key benefits:

- Security: it will be gated with easy access via your Ventsim™ license details
- Live status: release, activate and see who's currently using
- Latest version
- Dedicated support

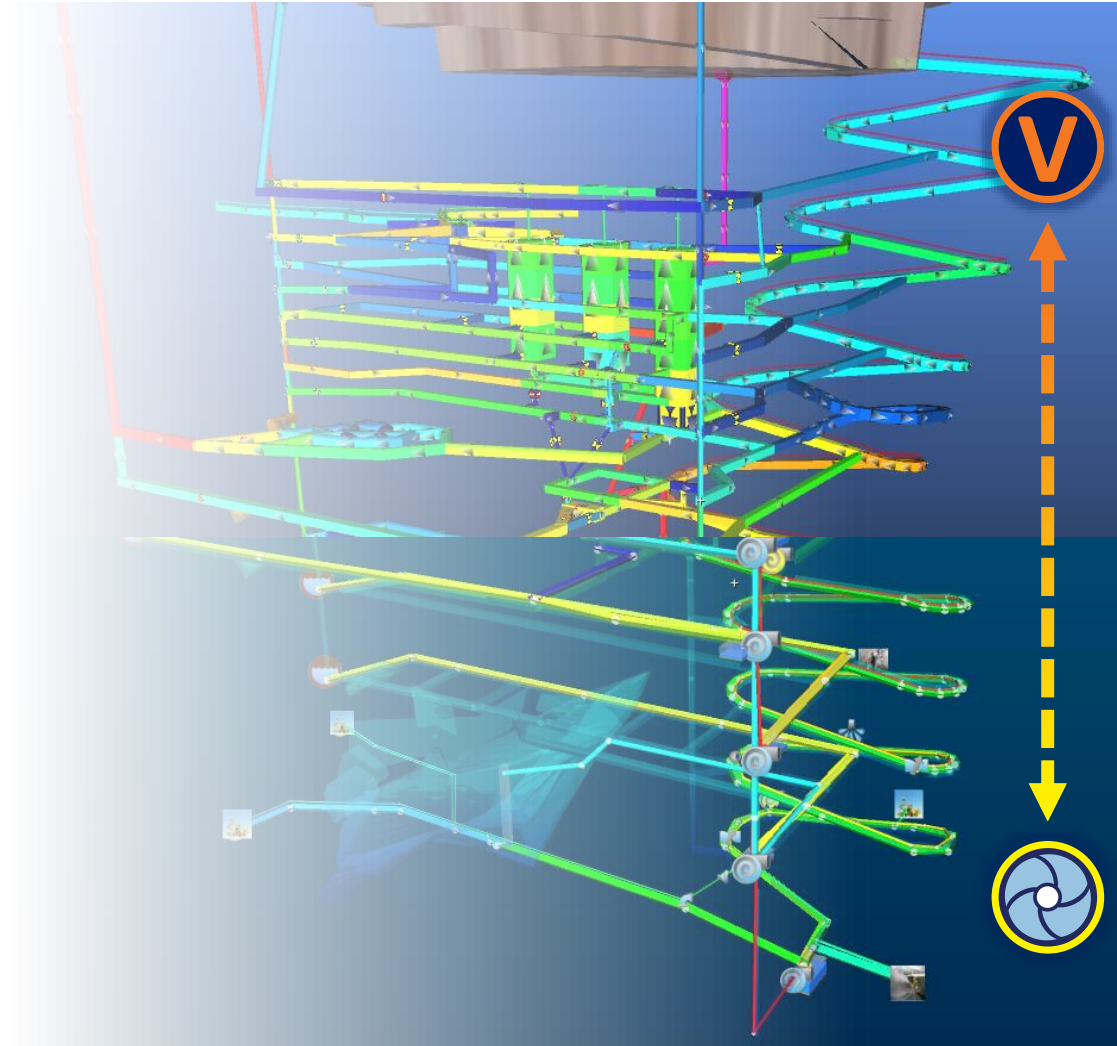
*...and more*



### *A **more accurate** Ventsim™ model through Pumpsim™ integration*

#### **Key Influence Considerations:**

- Open channels
- Heat around pipes and network
- Cooling system affects







**Thank you**

**Revolving Around You™**

© Howden Group 2023