Machine learning, used in the design process.

Predict places. Propose air settings. Check with the original model. Learn from the result.



Curved room B / retained final model section

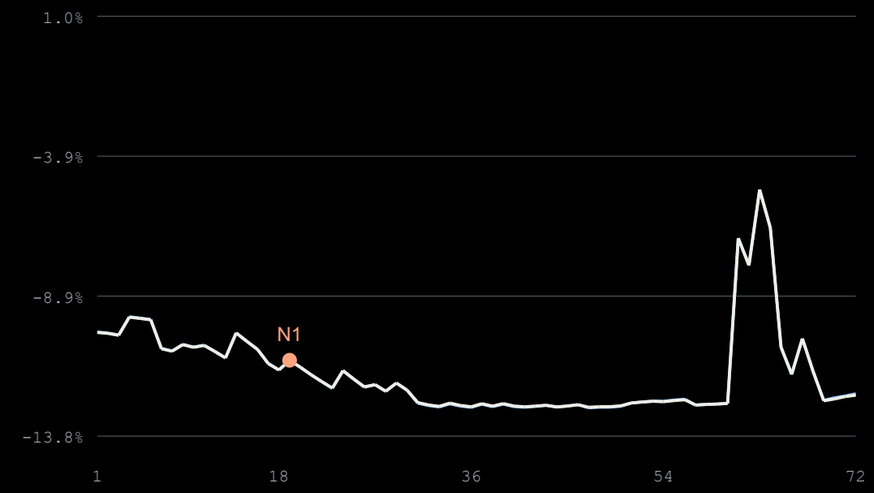
N1: alternative use of an existing seat. C1/F1b: journey starting seats. Retained visibility view: N1 chair 20 mm forward, 20 mm left. Amber lines are sightlines. Air predictions use centred N1; this image is not an airflow simulation.

ML proposed five new settings; 5/5 passed the original solver checks. Worst-case N1 exposure reduction: 2.71-2.83%.

Selected for predicted guard pass; none beat V120's best. Five results were added to the next fit; no setting has been adopted.

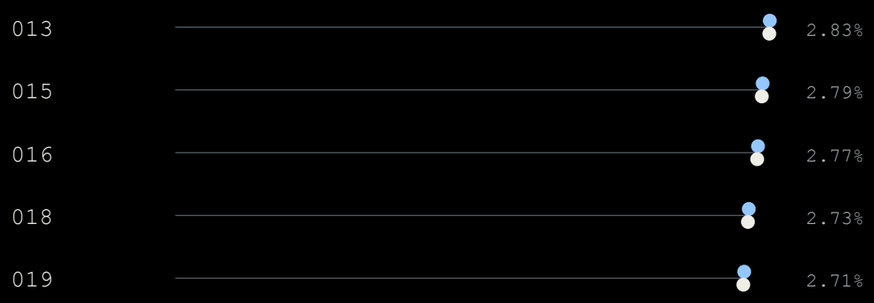
Spatial prediction, checked

Setting 013 / B / reference air / 0.55 m / AUC



Five prospective proposals

Worst-case N1 reduction / both rooms, all conditions



90 training settings -> 5 new ML proposals -> native checks -> 95-setting refit. Each setting checks 12 room/condition cases.

How well does the learned preview hold up?

Predict places. Propose air settings. Check with the original model. Learn from the result.



Straight room Bp / retained final model section

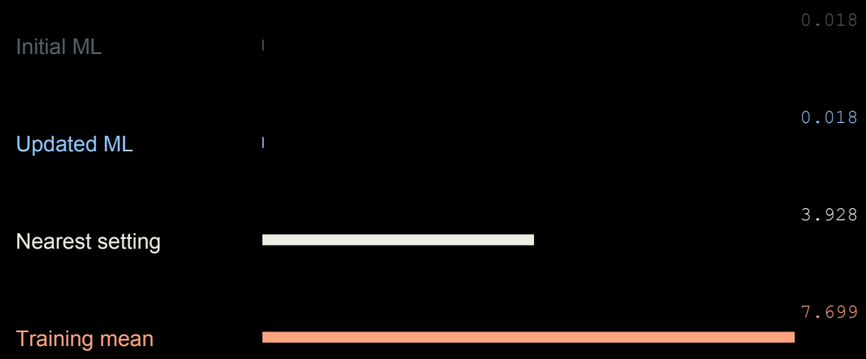
N1: alternative use of an existing seat. C1/F1b: journey starting seats. Retained visibility view: N1 chair 20 mm forward, centred laterally. Amber lines are sightlines. Air predictions use centred N1; this image is not an airflow simulation.

Validated preview within this test. On 40 fresh settings, mean spatial error was 0.018 percentage points.

Prediction accuracy, workflow use and optimisation superiority are separate claims. V120 search results remain unchanged.

Fresh predictive accuracy

Mean absolute error / percentage points of baseline



Guard recognition and coverage

7 / 13

Actually valid settings recognised

0 / 27

Invalid settings incorrectly suggested to pass

39 / 40

Settings with every output inside the band

All fixed preview gates passed. The five-setting update did not reduce fresh-test error.

Training-calibrated bands with a fixed minimum width (99.74% of fresh outputs). No physical safety or probability guarantee.