

Designed for Dust

Turning the room edge into a purposeful particle-collection surface.

5.74x

as many PM2.5 particles retained

Skairting V08 with modelled attraction outperformed standard skirting in a controlled near-floor simulation, retaining 42,701 particles versus 7,440 over ten minutes. [1]

Standard skirting



8.1%

Skairting V08 with attraction



46.2%

Percentage of near-floor released particles deposited on the skirting after 600 seconds. Approximately 92,400 particles released in each case.

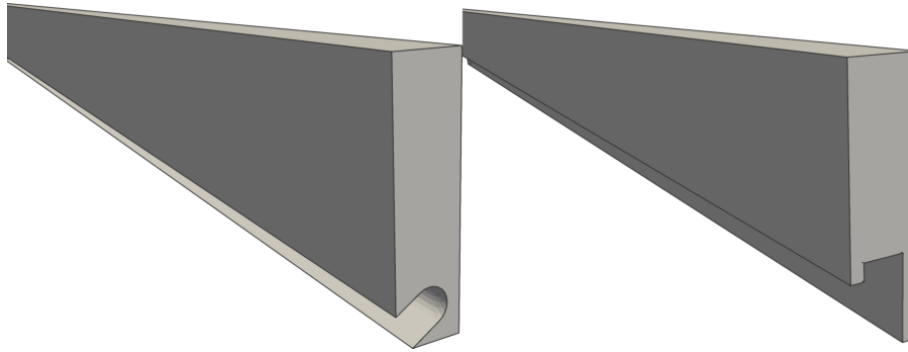
A familiar feature. A new purpose.

Skairting is being developed to attract and retain dust at the room edge, making the perimeter part of the clean-air design. The simulations provide a strong comparative result for combining the profile with an active collection surface.

Comparative PM2.5 modelling, not a whole-room removal rating. The total includes deposition on the outer cover as well as other skirting surfaces. Physical performance remains to be established.

Geometry and attraction

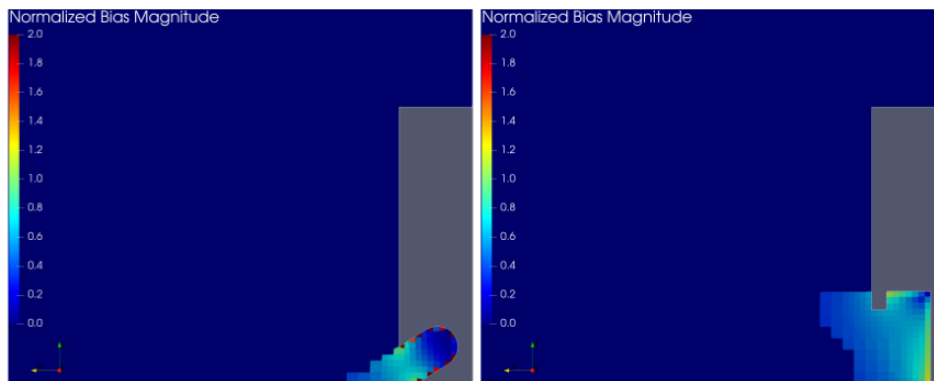
Six configurations reveal how the profile and collection field work together.



Original study geometry: V07 on the left; the revised V08 profile on the right. [1, Fig. 1]

41% more retention at the same field setting

At the modelled 0.25 kV/cm setting, V08 retained 42,701 particles against 30,270 for V07. The revised geometry and biased-surface arrangement gave a broader collection region. Both the profile and surface placement changed. [1]



Attraction-field visualisation: V07 left; V08 right. Matching normalised scales. [1, Fig. 2]

The combination makes the difference.

Without attraction, V07 and V08 retained similar amounts: 9.7% and 9.5%. With attraction at 0.25 kV/cm, V08 reached 46.2%. These results give a clear direction for developing the profile and collector surface together.

Field strength and reach are simulation inputs. The study does not establish the field strength or service life of a finished Electrodermal strip.

STUDY DETAIL

A clear basis for development

Traceable results, consistent conditions and a focused next stage.

Six cases. One consistent comparison.

Configuration	Retained	Fraction
D01 Standard, no bias	7,440	8.1%
D02 V07, no bias	8,977	9.7%
D03 V07, 0.50 kV/cm	33,842	36.6%
D04 V07, 0.25 kV/cm	30,270	32.8%
D05 V08, no bias	8,749	9.5%
D06 V08, 0.25 kV/cm	42,701	46.2%

How the study was run

A 4 x 4 x 2.5 m room, a 1 m skirting section and 0.05 m/s near-floor drift. Particles were released for 600 seconds into an established flow field. The attraction model acts within 20 mm of selected surfaces. [1]

What the result measures

Retention is total deposition on the skirting. In D06, 12,378 particles deposited on the outer cover, outside the intended recess collection zone. The model uses idealised surfaces and an inverse-square attraction law without overhang shielding; humidity, roughness and agglomeration are excluded. Results apply to the simulated profiles and near-floor release. [1]

Supporting airflow investigation

A separate gust study with attraction off found lower local peak air speed inside the recess, but essentially unchanged average floor shear. It assessed airflow forces, not particle release, so reduced resuspension is a design objective rather than a demonstrated result. [2]

Next questions: extend the comparison to 1 micrometre particles and assess the full room perimeter. The present reports cover PM2.5; these extensions are proposed, not completed.

[1] Nishan Jain, Skairting Room Study: V08 Profile With and Without Bias, 23 Jul 2026, pp. 1-5.

[2] Nishan Jain, Resuspension Study Stage 1: Gust Disturbance and Wall Shear Screening, 29 Jul 2026, pp. 1-6.