INTRODUCTION:

Interface pressure mapping data can be used to describe the performance characteristics of pressure reducing medical devices and are usually represented as a graphical display. These images indicate the degree of pressure reduction over an anatomical region and can identify any areas that are exposed to higher pressures. Such maps are regularly used by footwear and seating specialists, to prescribe pressure management devices to clients at risk of pressure ulceration.

Interface pressure maps cannot be directly related to clinical outcome, however they do provide a useful vehicle by which the technical performance can be demonstrated i.e. an ability to off-load or reduce pressure. For this reason such maps are used to make comparisons between devices.

METHODOLOGY:

- A calibrated pressure mapping system was used to compare interface pressures (IP) between two static air cushions
- Both cushions were set up according to manufactures user instructions
- Five healthy individuals, from a range of BMI and ages, were recruited
- Subjects sat upright in a wheelchair with foot-supports adjusted, so that the thighs were parallel to the floor
- The armrests were removed to prevent variable support of the body mass through the arms
- A foam chip sling-fill insert was placed under the cushion to ensure a flat support surface
- Each individual was sampled three times on each cushion, with the average values being recorded at each of the pressure thresholds

System A

Airtech® Cushion (Huntleigh Healthcare Ltd)

System B

- A static air-flotation cushion
- Constructed with an array of individual 5cm air sacs interlinked at the base to evenly distribute loading forces
- Inflated by means of a manual pump
- Correct inflation is determined manually by using the hand
RESULTS:
Two examples of pressure maps taken during the study show the pressure redistribution characteristics (Figure 1).

Subject: weight 90.1kg, height 1.72m.

![](image1.png)

Figure 1

From the sampling on each cushion the average reading at the thresholds were calculated and shown in Figure 2.

![](image2.png)

Figure 2

ADDITIONAL FINDINGS:

- The Airtech cushion was found to be more stable and lighter than Cushion B
- All the users preferred the preset valve system adopted by Huntleigh Healthcare and found it easier to use than the valve system of Cushion B
- The pommel in the Airtech cushion, which incorporates the pump, was felt to be a good idea

CONCLUSION:

The results indicate that the Airtech cushion out-performed Cushion B, during the tests at all three key pressure-interface thresholds. The Airtech cushion was significantly better at 60 and 40 mmHg, by 8.8 and 7% respectively. The Airtech cushion also proved popular with the test subjects in terms of practical application and the ease by which correct inflation pressure can be achieved; both of which are essential factors when used in unsupervised healthcare settings.