Internal pressures act on all structures with any element of permeability. What engineers equate this to may be down to subjective interpretation of the building envelope, including its façade and apertures.

The following aims to give generic guidance on the use of positive internal pressures, but approval of the applied loadings should always be sought from the client and/or project engineer.

**positive internal pressure coefficients (+0.2 or 0.0)**

BS EN 1991-1-4 § 7.2.9 (6) NOTE 2 states that where it is not possible or justified to estimate permeability, \( c_p \) is to be taken as the more onerous of +0.2 and -0.3. BS 6399-2 concurs and provides these values in a tabulated format. However, many would argue that a positive value of +0.2 is conservative for many design cases with other design standards discussing this further.

SCI guide P394 suggests that “since the surface area exposed to negative external pressure will usually be much greater than that exposed to positive, a calculation based on EN 1991-1-4 7.2.9 (6) should be able to justify a \( c_p \) well into the negative (i.e. not +0.2). SCI guide P288 goes further and advises that positive internal (e.g. +0.2) pressure can only occur in an enclosed building when two opposite sides are equally permeable, other faces impermeable and wind acting normal to the permeable face. Appendix C agrees but says +0.2 should be considered as an upper bound.

The nearest thing to prescriptive guidance is the BRE Digest 436 document which states that the internal pressure coefficient for completely clad enclosed warehouse-type buildings, without opening windows, may be taken as \( c_p = -0.3 \), and says that generally for buildings +0.2 is now the exception instead of the rule.

**Dominant Openings**

BS 6399-2 § 2.6.2 and BS EN 1991-1-4 § 7.2.9 (4) both state that the face of a building is considered dominant when the area of openings within that face is at least 2x the area of openings of the remaining faces.

Note also that BS EN 1991-1-4 § 7.2.9 (3) states where a dominant opening would be shut during a storm, the design should also be checked as an accidental situation (available within the MetPurl software).

Further information is available from PD 6688-1-4 (BSI, 2009).

Further information on the design of portal frame buildings is available from SCI publication P399.