FEDS
FIRE EXPOSED DUCT SYSTEM

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The Swedish National Board of Housing, Building and Planning's general recommendations on performance based design – BBRAD3

The National Board of Housing, Building and Planning's general advice on performance based design, a higher surface temperature can be accepted based on a model of natural fire.

Furthermore, fire protection class EI can be exchanged for class E in combination with a protective distance to evacuating persons and combustible material.

See the following from **BBRAD3:**

> *General recommendation*
> When designing separating structures using natural fire models, the temperature on the side of the structural element not exposed to fire should not be higher than 200°C as an average or 240°C at any point.
> Integrity (E) of separating structure should be designed in the same manner as corresponding fire resistance class pursuant to BBR.
> The assessment of integrity should give particular consideration that structural elements can be deformed or damaged in case of fire.
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> Fire resistance class EI can be exchanged for class E if the safety for people evacuating is high and the probability of fire spread does not increase. The requirement is satisfied if doors, walls and similar are arranged so that the distance to people evacuating or to combustible material is long enough so that the thermal radiation does not exceed 2,5 kW/m^2. Higher thermal radiation levels can be acceptable if the time aspects for evacuation and ignition are taken into consideration.

In the **FEDS** program there is the possibility is to calculate with different emissivity, outside and inside duct, as well as outside insulation. A prerequisite here is that the emission number is equal to the absorption number, which normally applies.

Thus, there is the possibility of allowing higher surface temperatures than what the classification allows as the program calculates a stationary state, which is why the cooling phase is irrelevant.