

# Sustainable Steel Buildings Through Natural Fire Safety Concept

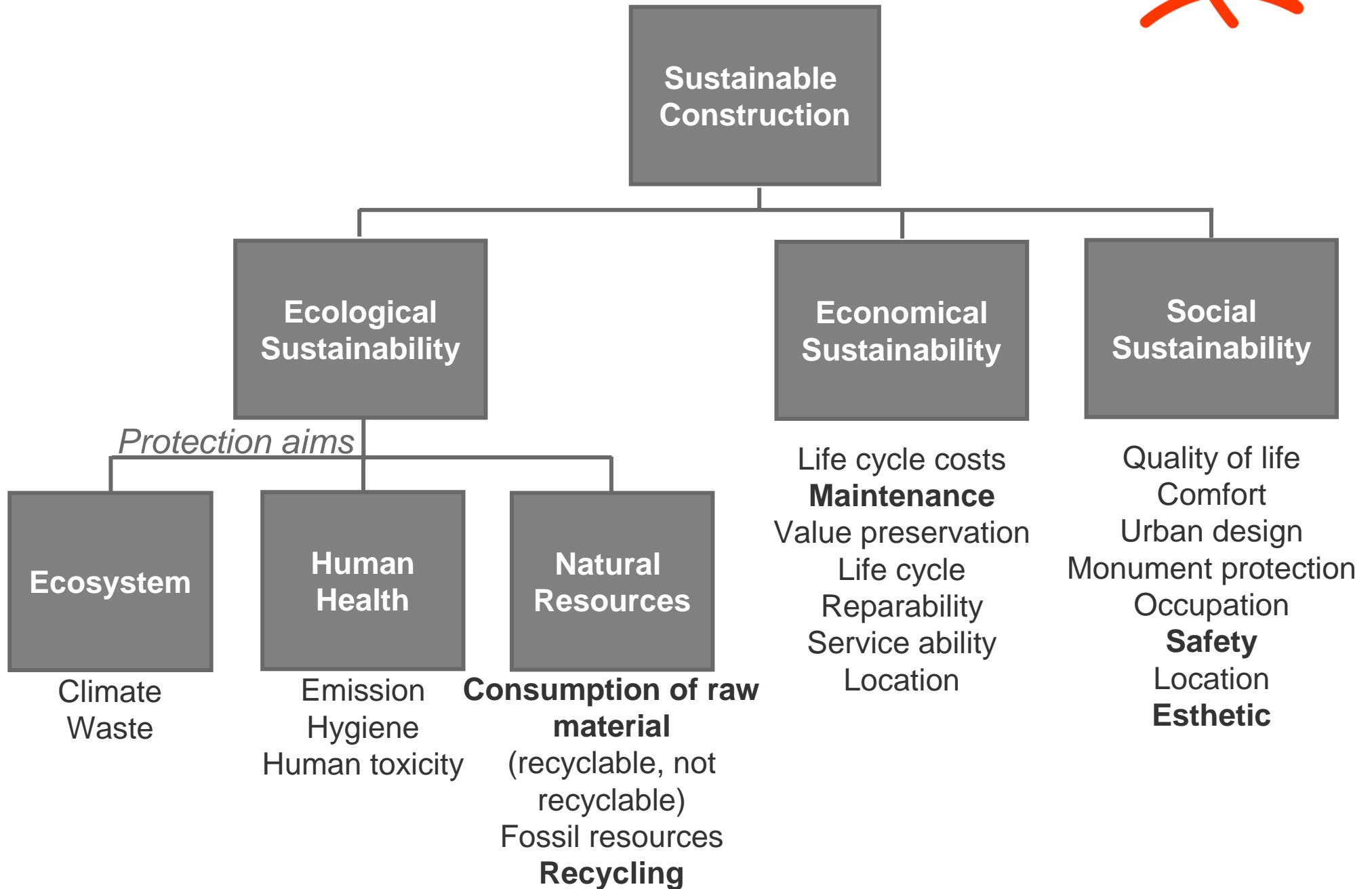


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# Sustainable Construction



# Sustainable Steel Buildings



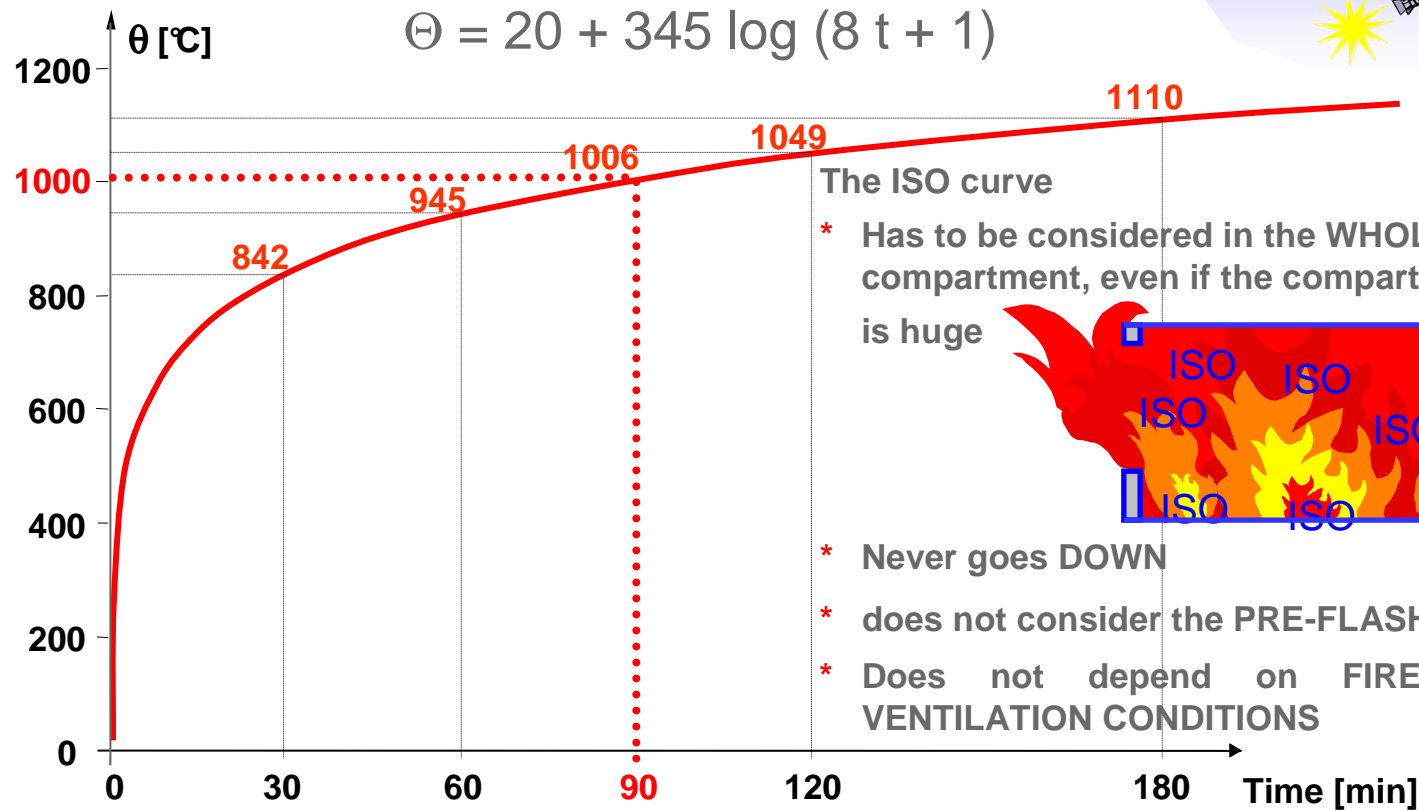
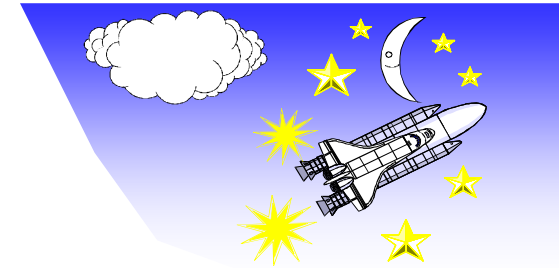
- The base material of hot rolled steel sections is recycled ferrous scrap (~100%)  
-> hot rolled steel sections are a recyclable, sustainable material
- The overall costs for passive fire protection in relation to the construction costs of steel structures (e.g. car parks, ...) vary from 10% – 30%  
-> The intelligent use and optimization of fire protection is a major asset for sustainable steel structures
- Modern fire engineering (NFSC, EN 1991-1-2: 2002) allows a significant reduction of the costs for fire protection, in some cases even to zero



# Fire Safety – Standard Curve

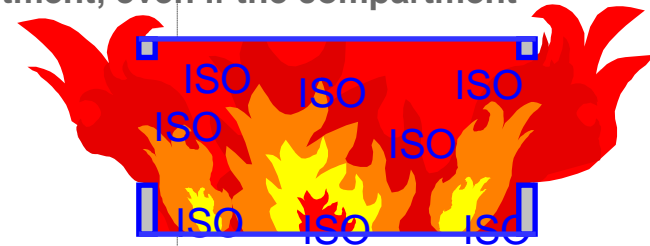


EN 1991-1-2 (2002) Temperature-time curve  
[ISO-834, EN 1364 -1]



The ISO curve

- \* Has to be considered in the **WHOLE** compartment, even if the compartment is huge
- \* Never goes **DOWN**
- \* does not consider the **PRE-FLASHOVER PHASE**
- \* Does not depend on **FIRE LOAD** and **VENTILATION CONDITIONS**



# NFSC – Open Car Park

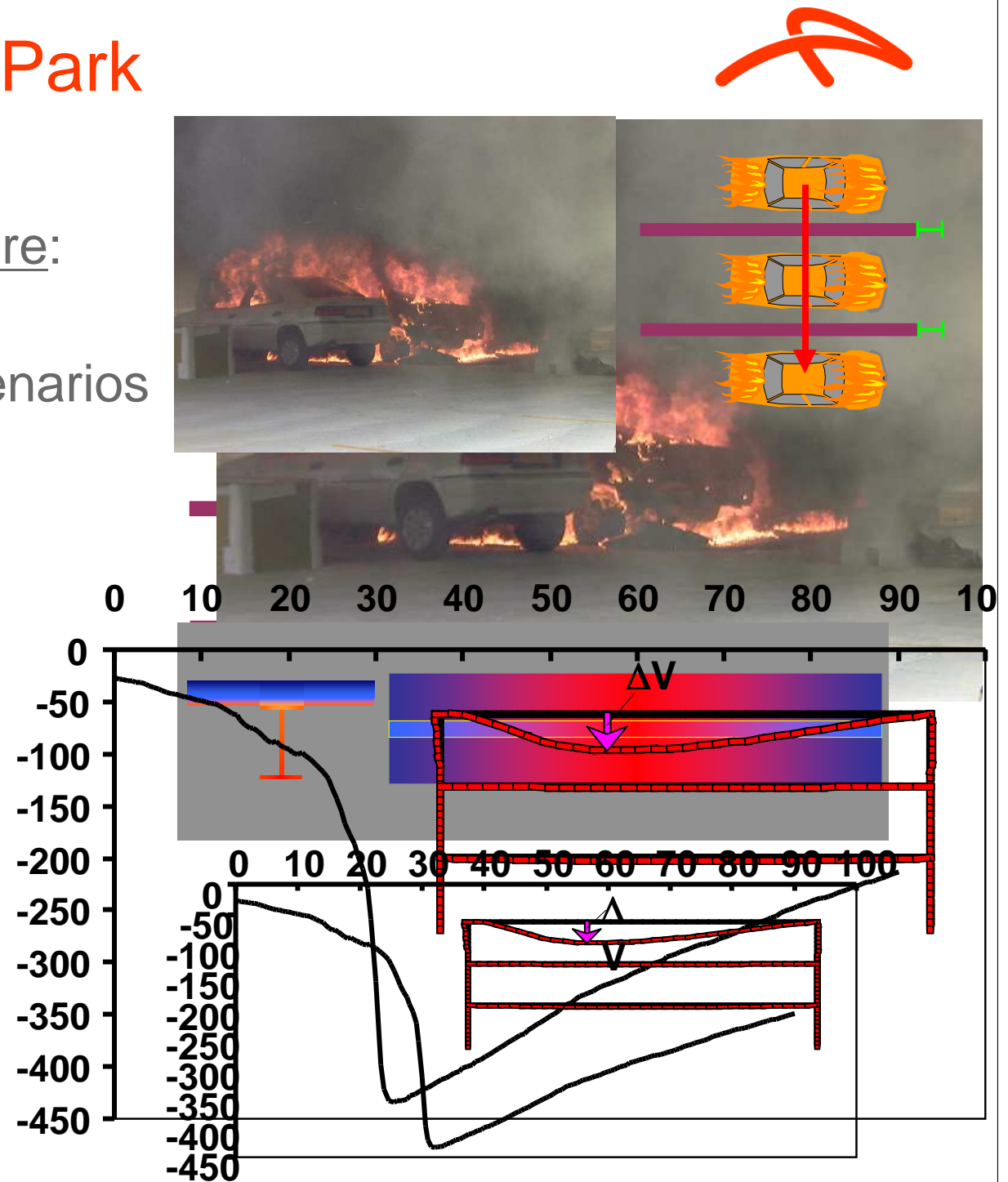
- Fire Engineering Procedure:

- Determination of fire scenarios

- Fire propagation

- Thermal response

- Mechanical response





# Application NFSC – Open Car Park





# Application NFSC – Open Car Park





# Application NFSC – Open Car Park







Thank you for your attention

