

Experimental study of localized fire thermal exposure

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Localized fire

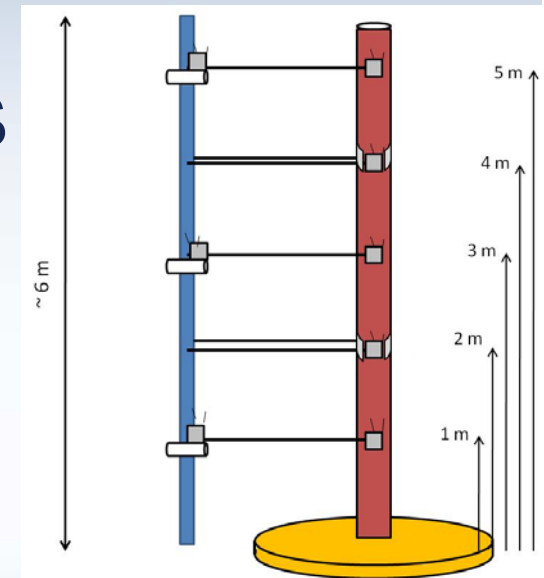


- Large in-door enclosure
- Flashover with uniform temperature unlikely
- High thermal exposure levels of structural elements

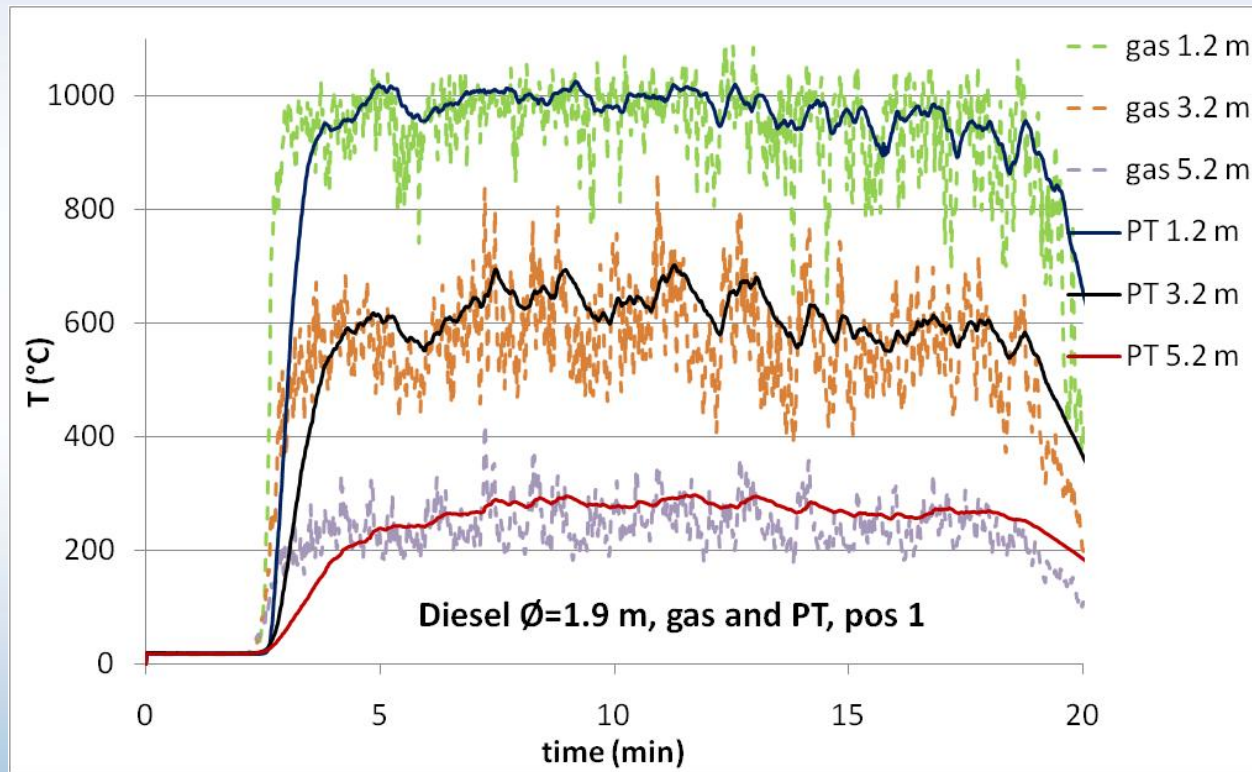


Experimental setup

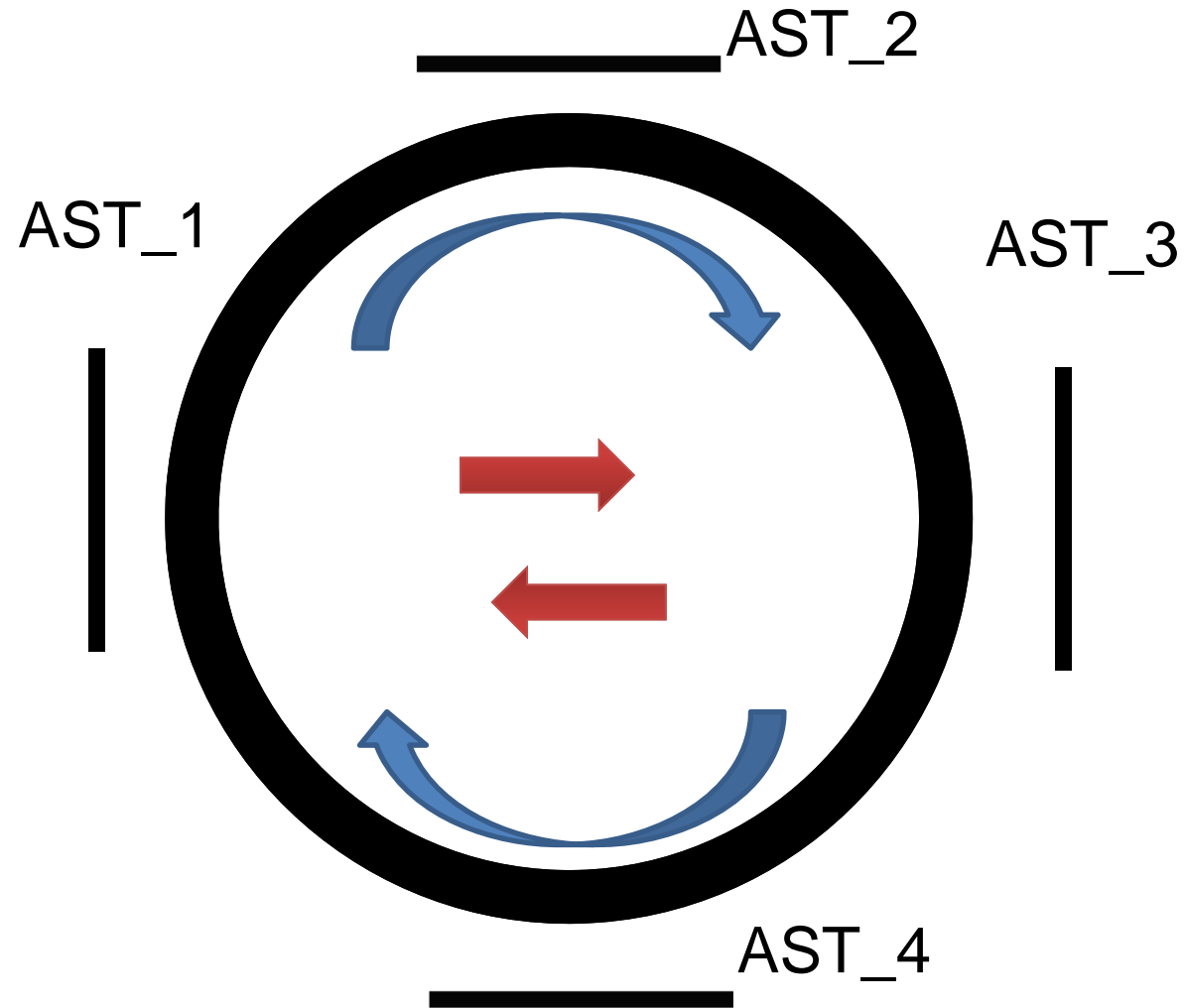
- Temperature measurements
 - Gas temperature
 - Temperature measured with PTs
 - Steel temperature



Temperature measurements

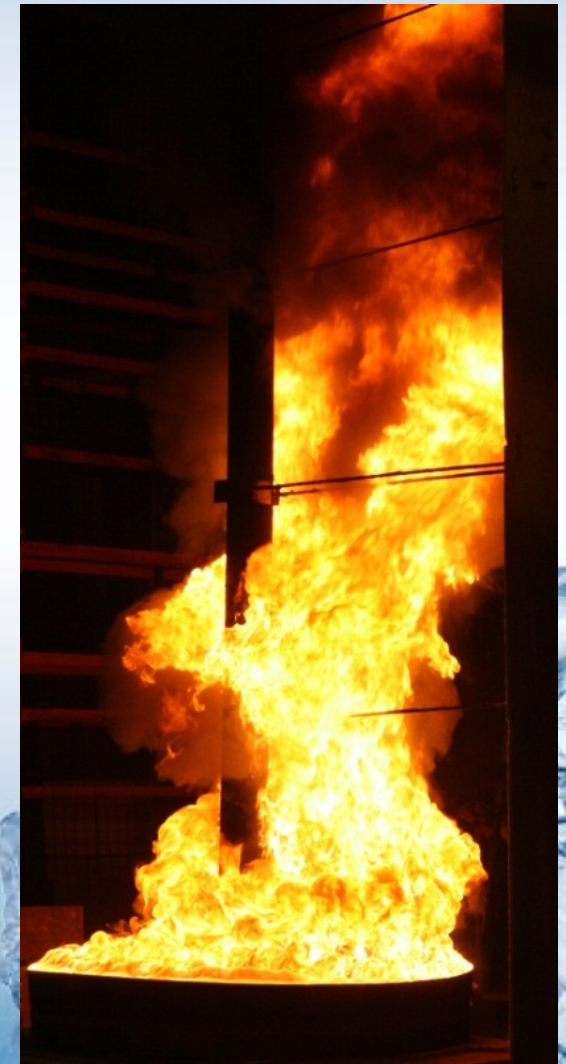
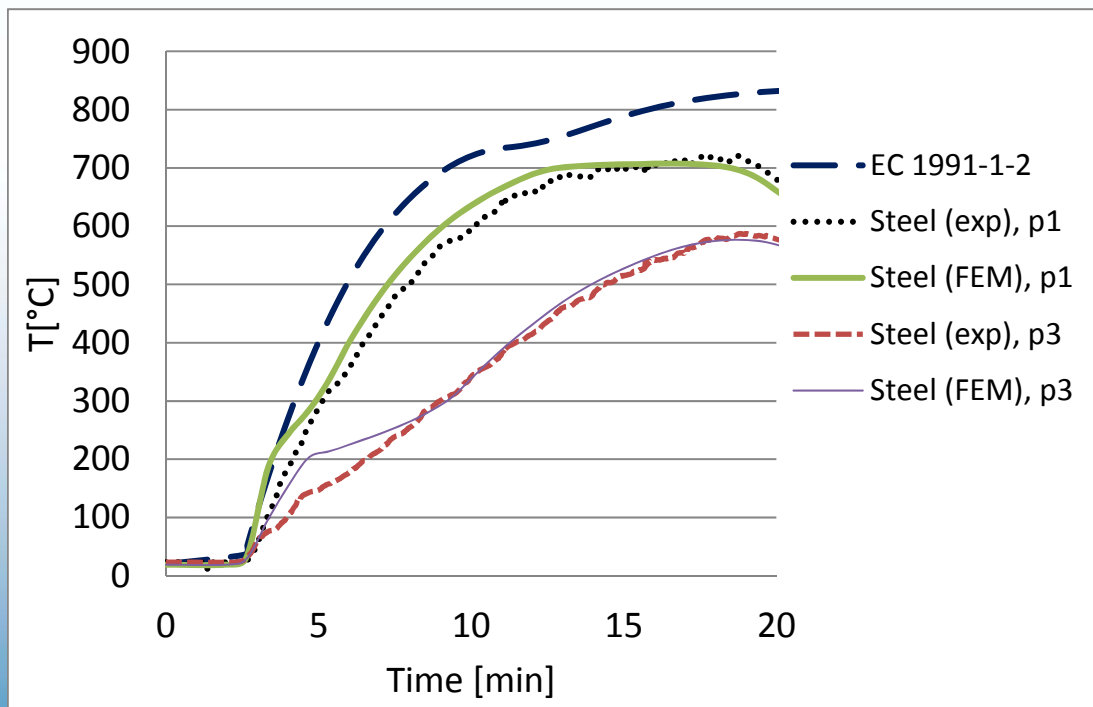


Heat exchange inside the column

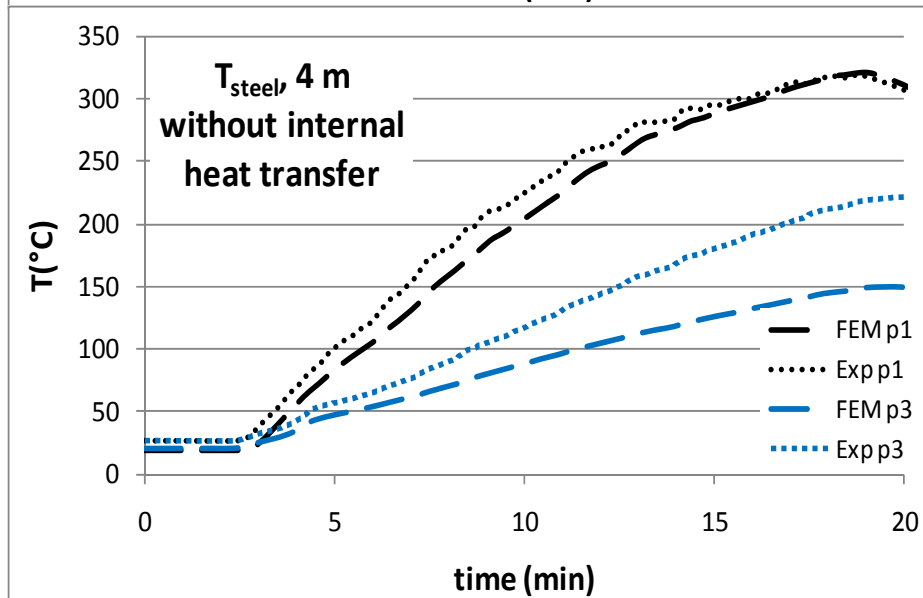
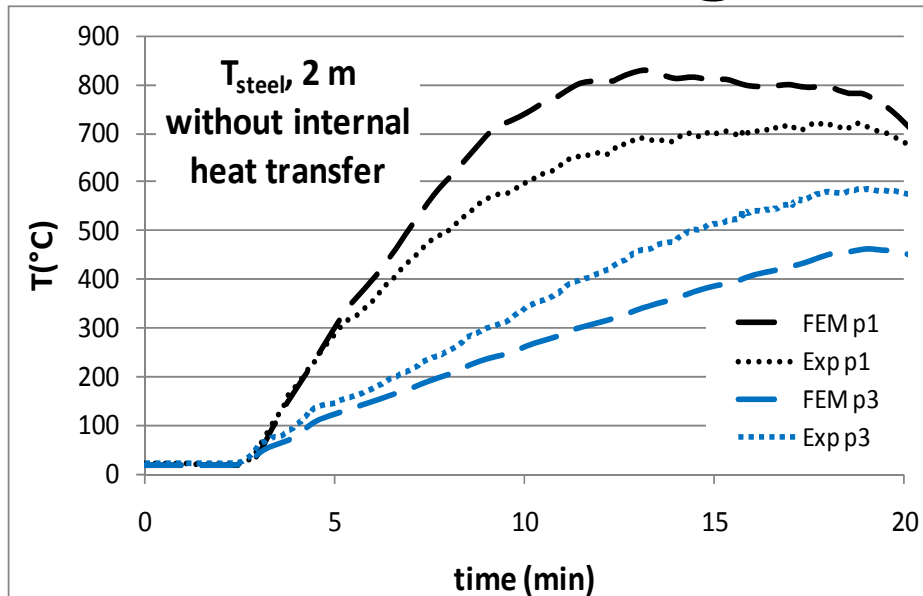


Steel temperature

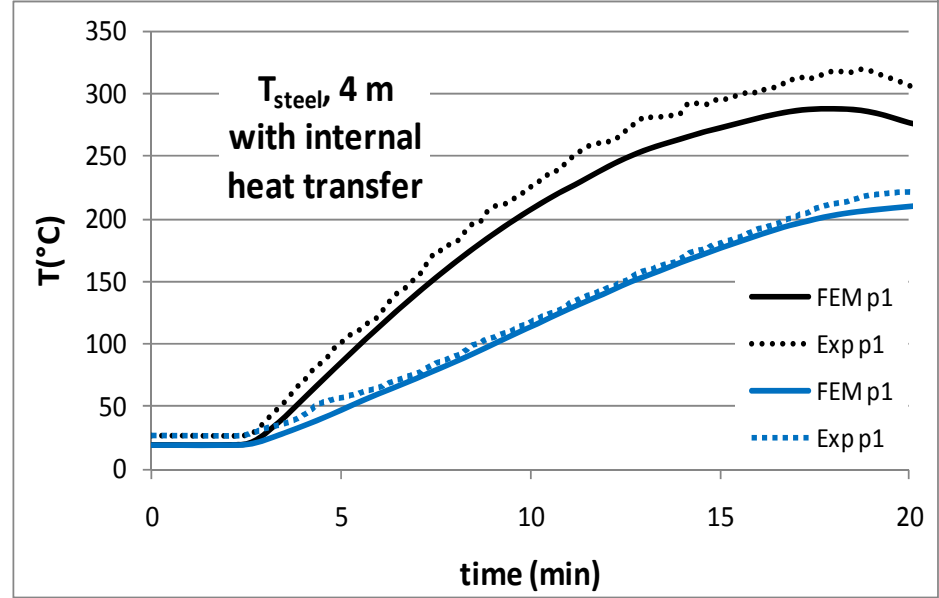
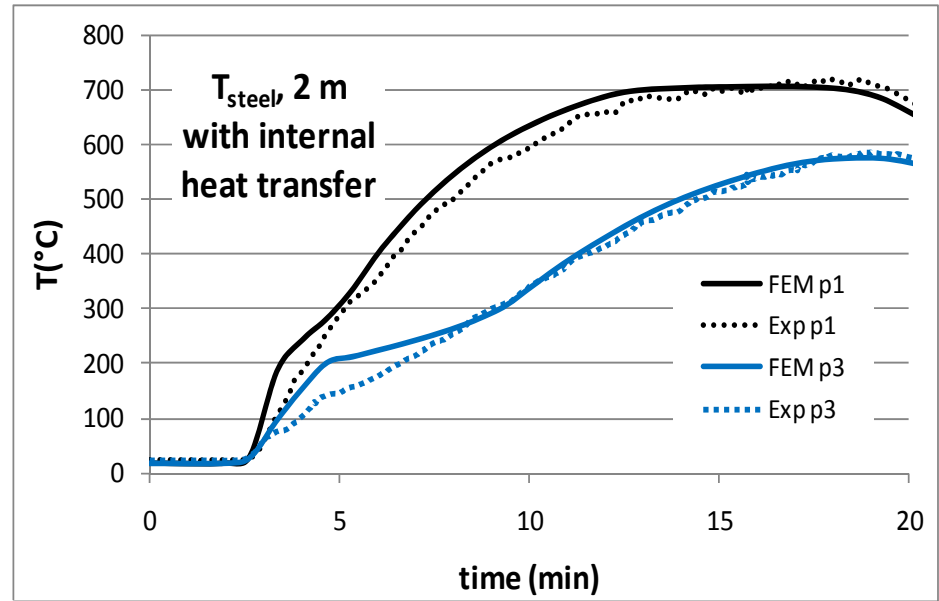
- PT combined with TC \rightarrow AST
- AST \rightarrow steel temperature
- 2m above burning source



Without heat exchange



With heat exchange



Conclusions

- Eurocode 1 gives conservative results
- PT readouts → accurately temperature of the steel structure
- **Future work** - Asymmetric thermal exposure on load-bearing structural elements

