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# INTEGRATION OF A MULTIZONE AIRFLOW MODEL INTO A THERMAL SIMULATION PROGRAM

Rasmus L. Jensen<sup>1</sup>, Karl Grau<sup>2</sup>, and Per K. Heiselberg<sup>1</sup>

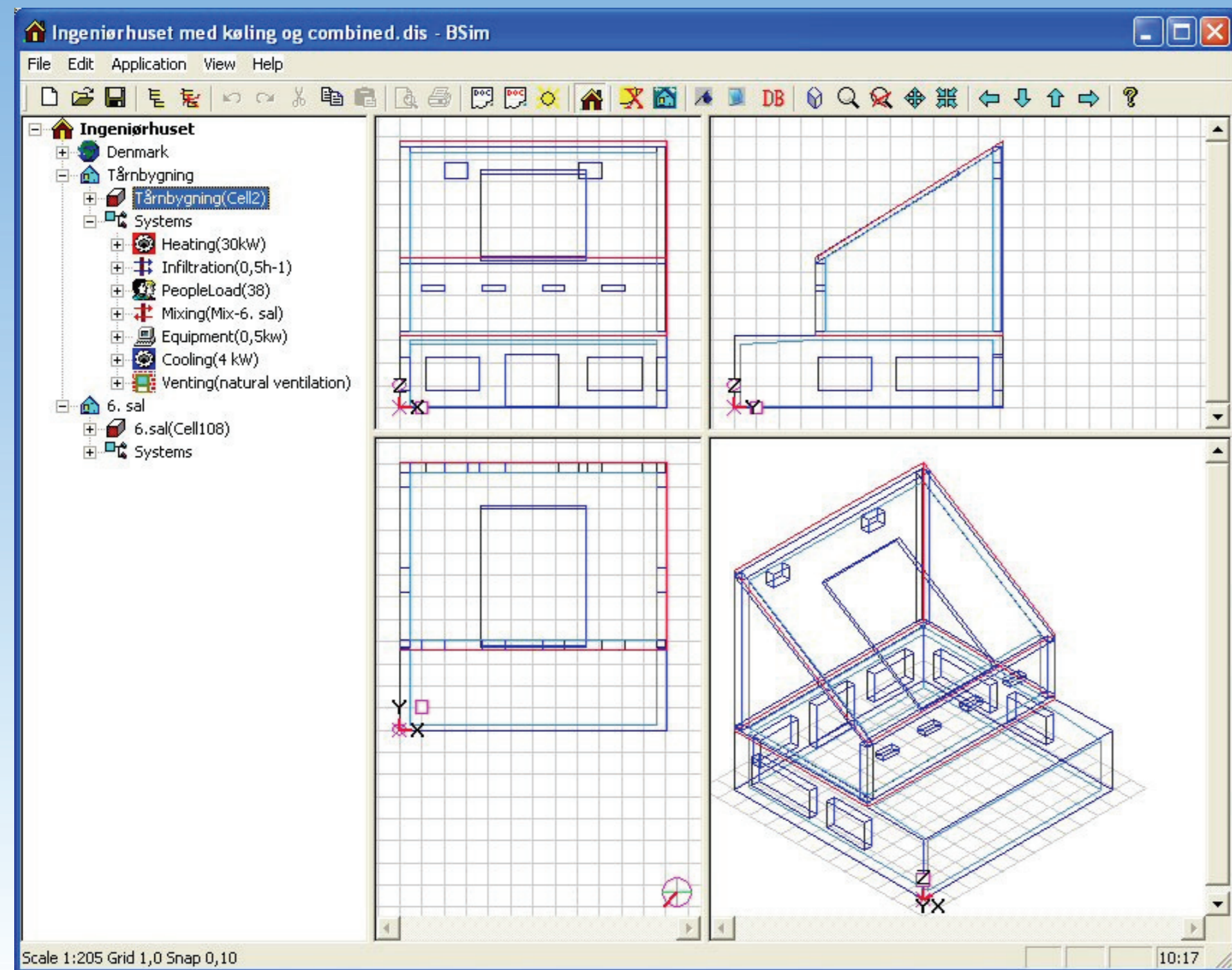
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## SUMMARY

An existing computer model for dynamic hygrothermal analysis of buildings has been extended with a multizone airflow model based on loop equations to account for the coupled thermal and airflow in natural and hybrid ventilated buildings.

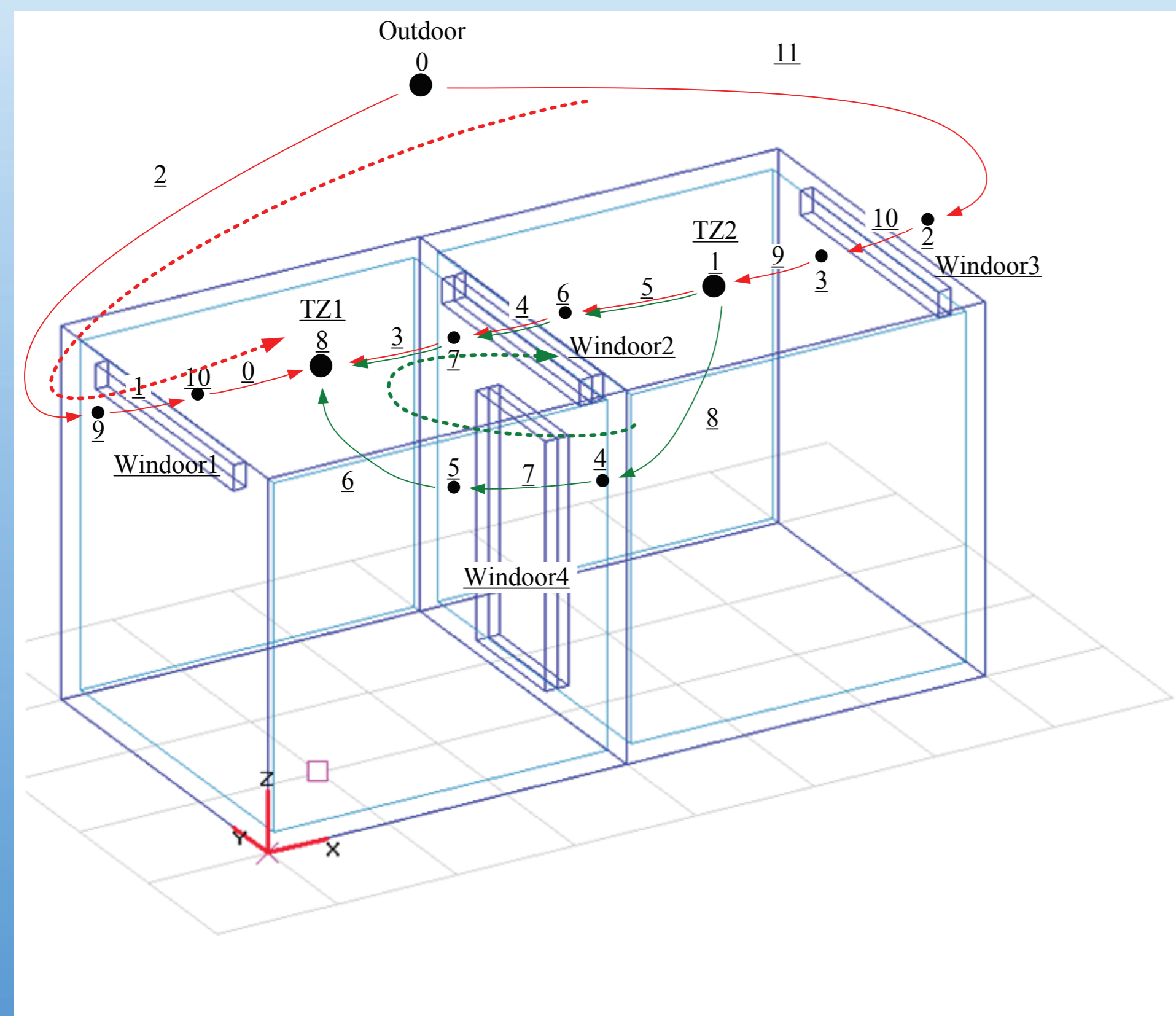
## BSIM USER INTERFACE



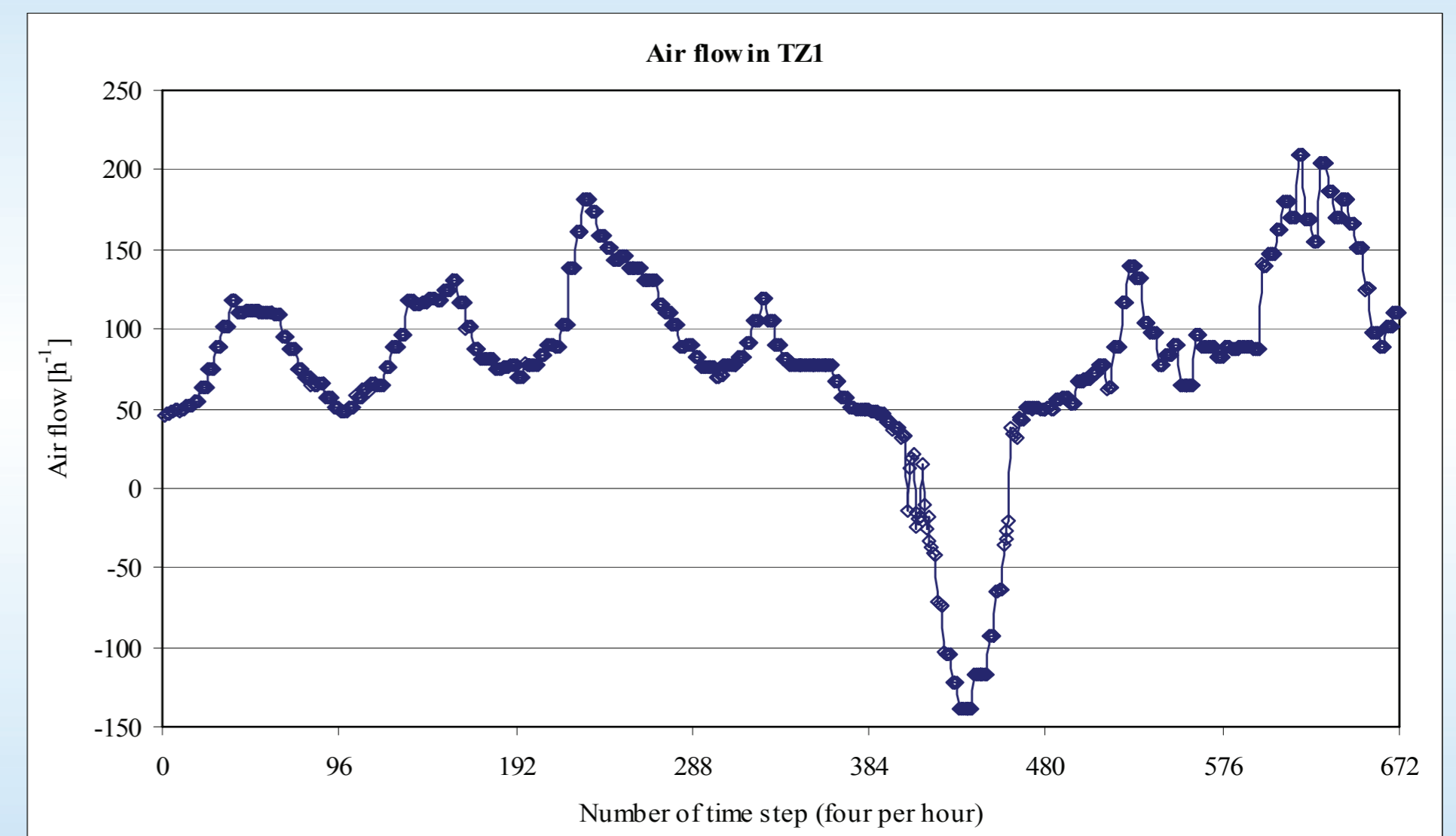
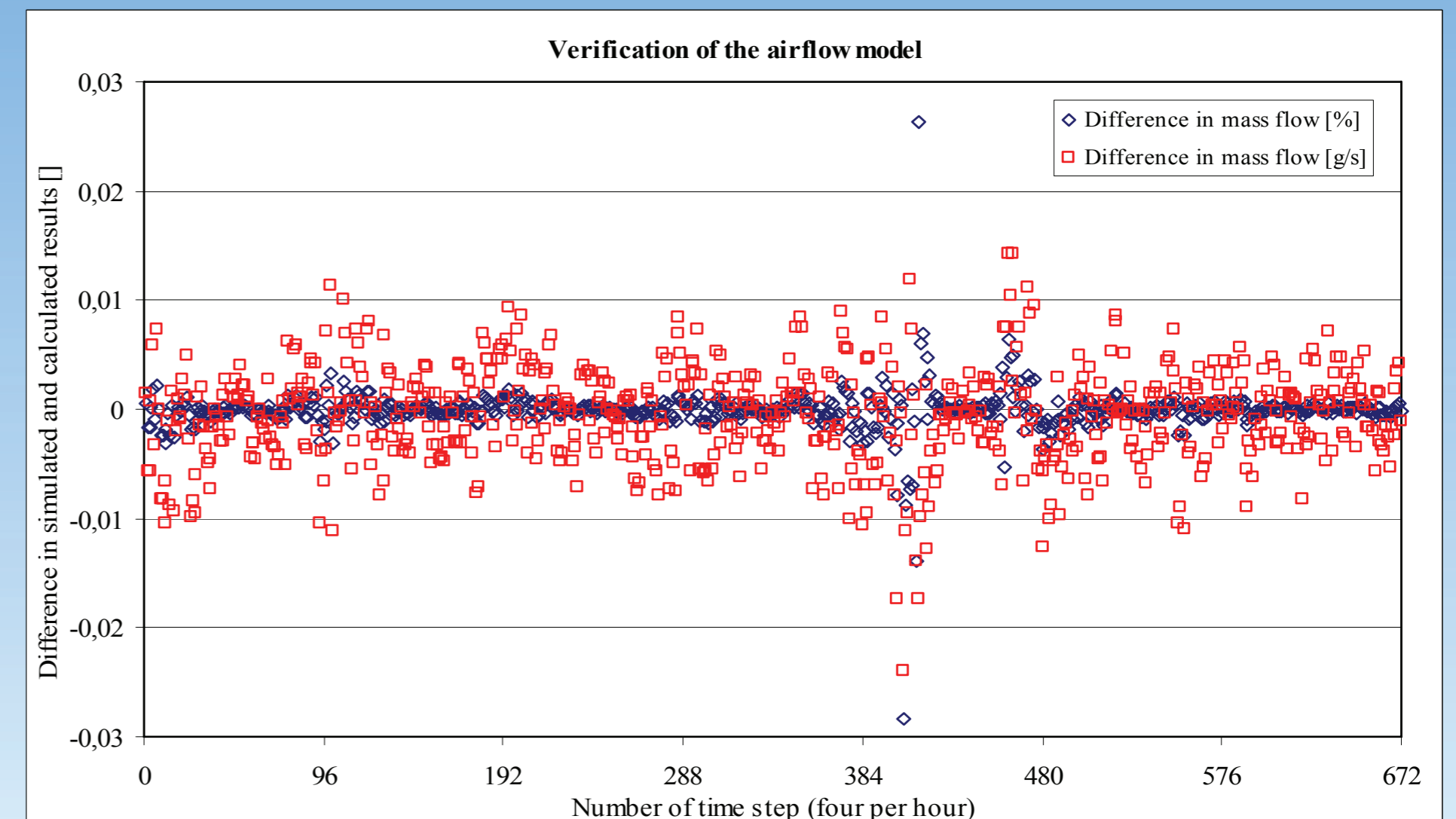
SimView, the user interface of BSim for editing and viewing the layout of the building

## LOOP EQUATIONS

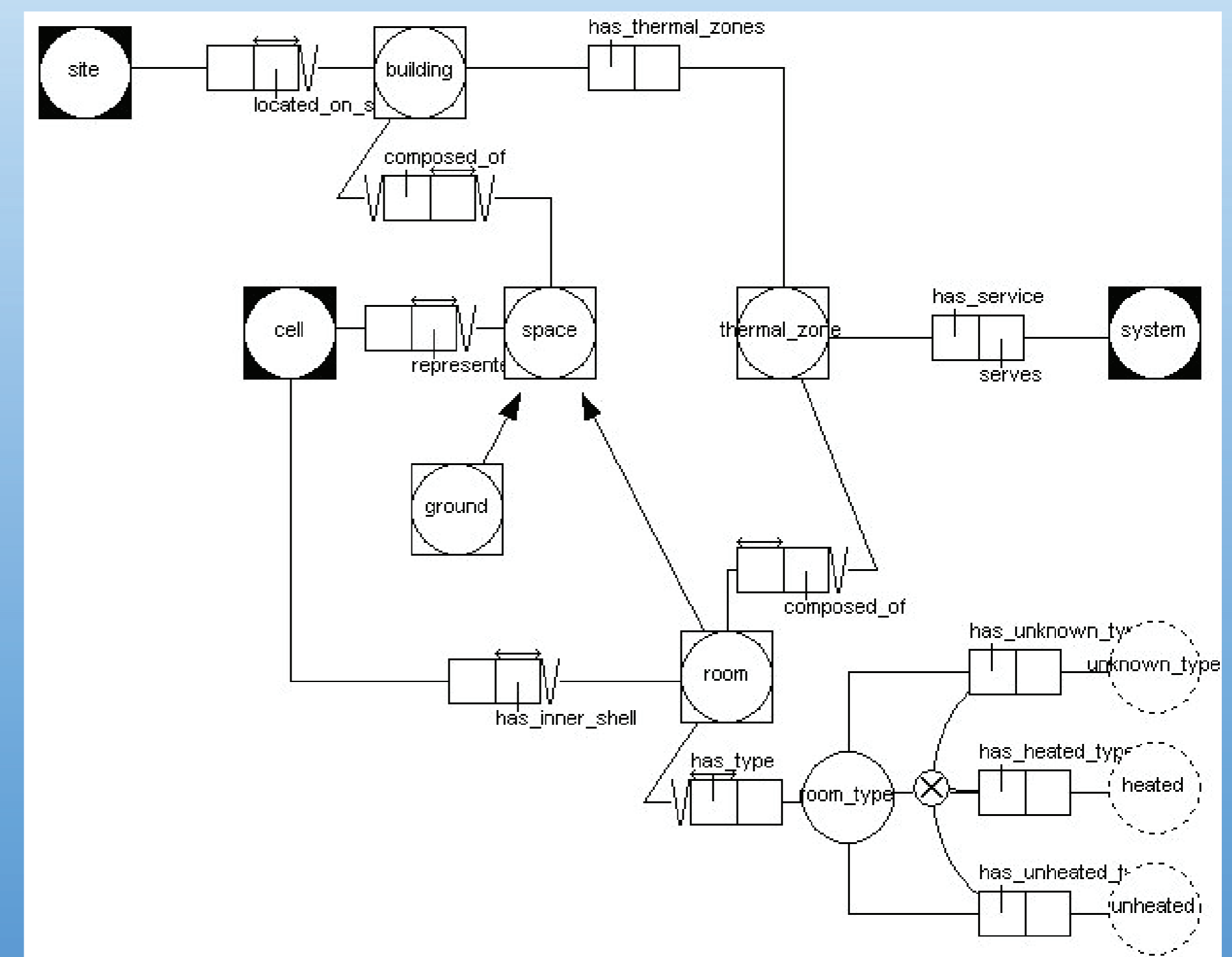
$$\Delta P_{loss} = \Delta P_{buoyancy} + \Delta P_{wind}$$



## VERIFICATION OF THE AIR FLOW MODEL



## BSIM DATA MODEL OF A BUILDING



## CONCLUSIONS

The first experience with using the loop equations appears promising. Solving the equation system requires only few iterations to convert, typically less than 3, and no problems with converging has been detected in this preliminary stage.