



Simplified Sizing and Selection of HVAC Systems

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Abstract

Several problems are still experienced in the design of energy efficient buildings. Two major problems are the overspecification of HVAC systems, and the specification of an inappropriate system.

The purpose of this thesis is the design of an expert system that will help engineers and architects to size and select HVAC systems in the preliminary and brief design stages. At this stage of a project there is very little technical data and engineers usually use their experience to quote loads and to select a system. A simplified cooling load calculation module was designed to give a reasonable answer while using sketchy input data. An expert system was then designed to make the selection process easier.

Both systems are easy and fast to use. The selection module gives usable and realistic answers. The cooling load calculation module unfortunately did not achieve the desired accuracy and should be redesigned.

Samevatting

Daar is steeds verskeie probleme in die ontwerp van energie-effektiewe geboue. Die twee hoofprobleme is die oorontwerp van 'n verkoelingstelsel, en die keuse van 'n ontoepaslike stelsel.

Die doel van hierdie verhandeling is die ontwerp van 'n deskundige stelsel wat konsultant-ingenieurs en argitekte kan help met die lasberaming en keuse van 'n verkoelingstelsel in die inleidende stadiums van 'n ontwerp. Die konsultant maak gebruik van sy ondervinding om lasberamings te doen en stelsels te selekteer omdat daar min tegniese data is. 'n Vereenvoudigde lasberekeningsmodule is ontwerp om redelike antwoorde te gee maar wat min insette gebruik. 'n Deskundige stelsel is ontwerp om die seleksieproses te vereenvoudig.

Beide modules is eenvoudig en maklik om te gebruik. Die seleksiemodule gee realistiese en bruikbare antwoorde. Ongelukkig is die antwoorde van die lasberekeningsmodule minder akkuraat as wat vereis word, en moet verkieslik herontwerp word.



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