

Some AuditAC project results: the AC running costs tool and the system recognition guide

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Abstract

Owners of air-conditioning (AC) systems are more and more responsible of their good operation and more conscious about the possible both energy and money savings through a "wise" management.

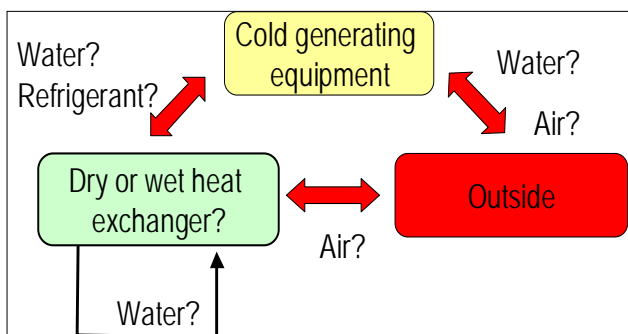
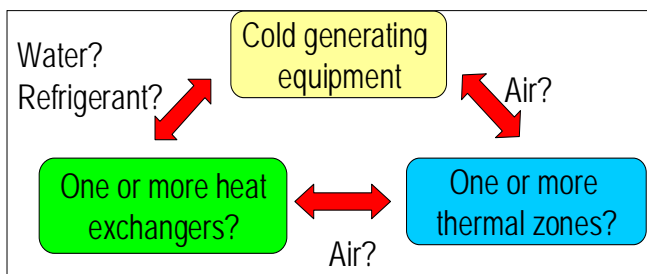
The incoming **inspection** is an incentive for AC owners to go through process renovation or retrofit. In the frame of the AuditAC project, we have created two basic tools in order to help building owners to decide of investments in a retrofit after an **energy audit**.

As a guide towards owners or energy managers of AC plants, the first tool illustrates how to do an **inventory of existing equipments** walking through technical rooms and the building in case of lack of the documentation about the system. Our goal is to propose simple checks allowing to identify the type of the cold generating system and condensing technique in order to prepare and fasten the incoming inspection or audit.

The second tool is a spreadsheet called **AC-cost**. Some simple inputs allow to estimate *past* and *future* running costs of the equipment (namely energy, operation and maintenance). Four common energy saving measures (ESM) are moreover proposed and money savings generated by their (combined or not) implementation are calculated in order to advise users about their economical relevancy.

Leading the owner through the inventory of his AC plant

Simple five-step method: to determine the nature of the process to produce and distribute the cold energy into the building and the condenser technique



Rising the awareness on the operation aspects

- Global approach through the costs: include maintenance in the analysis
- Promote the following of the consumptions
- Promote some energy saving measures through a running cost analysis

AuditAC **AC-costs** only for cooling systems 6/11/2006 **Reset All** **Reset projects**

The tool will allow you to estimate your AC running costs and to assess the effects on these costs of some energy saving measures in two steps. Please follow the instructions in the green cells, fill the blue cells, the yellow cells will show the results of the calculation. When you have finished, before to begin another calculation please reset and enter the parameters.
First step: define what are the running cost of the present equipment

Present plant and calculation characteristics	
Conditioned area (m²)	
Default Discount rate Plant	8,0%
Climate (choice an item from the list)	
System type (choice an item from the list)	
Do you know the installed cooling capacity (kW)?	If you don't know it click here to estimate it
The system includes a wet tower condenser? (y/n)	
In which year the present plant has been installed?	
Plant age	2006,0
Do you plan to stop the existing plant for complete renovation? In which year?	Number of years that will be used for the calculation -1986,0
*If you don't have planned any date for renovation a default plant lifetime is used (20 years)	

Running costs calculation for the present plant							
Enter some energy and water costs (at least for two different years) then click here	OR	If you don't have any cost recorded you can estimate your energy and water costs clicking here	Then	Enter your maintenance cost (at least two different years) then click	OR	If you don't have any maintenance cost recorded you can estimate your maintenance cost clicking here	
Years		1995		1996	1997	1998	1999
Energy costs (€/year)		25035		25035	25035	25035	25035
Water costs (€/year)		0		0	0	0	0
Maintenance (€/year)		10494		11446	12402	13356	14310

Second step: we propose a certain number of measures in order to calculate possible savings. choose one or more projects you can implement on your system to improve its efficiency or reduce its consumption and follow the instructions in the green cells in order to calculate the NPV of the future running cost and the subsequent savings.

Do you know the EER of the present equipment? If unknown a default value can be obtained clicking here	2,50	**You can check or obtain the EER of the present and new equipment clicking here: http://www.eurovent-certification.com/			
Do you know the EER of the new equipment? If unknown a default value can be obtained clicking here	3,34				
Years	9,0				
Additional investment (€): if you don't know this value it will be automatically	26000,00	Enter the values in the blue cells then click here			
Actualised running costs of project 1	68167				
Total actualised Savings on the remaining life of the existing plant including the new investment paying off (€) on 20 years	2137	Average Savings for running costs (€/year)	1637	Average savings for running costs (% per year)	27%
Pay back time (=20 if higher than 20 years)	17				

Some cost used in the tool to estimate running costs :

	Maintenance cost as % of equipment cost
RAC - Room Air Conditioners & other unitary without primary air	1%
RAC with primary air	3%
Packages and splits with primary air	3%
CAC - Central Air Conditioners with Air Handling	6%
CAC - Central Air Conditioners without Air Handling (except primary)	4%
VRF & primary air	6%

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