Air Conditioning Inspections – the facts

The legislation

The current requirements of the Energy Performance of Building Directive (EPBD) include the inspection of air conditioning systems in buildings with a cooling capacity over 12kW. The Energy Performance of Buildings Regulation (EPBR), the implementing regulations for England and Wales, have, in line with the EPBD, require the air conditioning inspections (ACI's) to be completed with the following deadlines;

- All systems put in place on or after 1st January 2008 to be inspected within 5 years of installation
- All other air conditioning systems over 250kW output should have been inspected by 4th January 2009
- Any air conditioning systems above 12kW must be inspected by 4th January 2011

For any system which undergoes a change of ownership (i.e. where a building may have been sold) and no inspection report was given to the new owner, a new inspection must be completed within three months of this change.

Carrying out an inspection

An air conditioning report (ACR) is produced as a result of the inspection and is intended to detail recommendations on how the systems could be run more efficiently. The systems must be inspected by competent and accredited persons who belong to an approved scheme. One such scheme is operated by CIBSE Certification, which accredits air conditioning inspectors for both complex and simple systems throughout the UK, as well as accrediting energy assessors for energy performance certificates and display energy certificates. All CIBSE accredited assessors are accredited on the basis of their experience, prior knowledge and competence, as measured against the relevant National Occupational Specification.

CIBSE TM44, 'Air conditioning inspections', was produced by CIBSE with the help of the HVCA, IoR, BSRIA, FETA and other industry bodies, and describes how to carry out an inspection. The first step is to review system records. More recent buildings should have a building log-book to meet Building Regulations, or have commissioning records which detail plant types, sizes and locations.

Reviewing maintenance records and examining installed equipment confirms that plant matches the records, which should be updated if required. Where systems are already well maintained and controlled, then wider physical inspection may be limited. However, where maintenance is lacking, or information is missing, the inspector needs to investigate further. Examining system controls and settings offers the greatest potential for low or no cost adjustments, improvements and savings.

Lodging Air Conditioning Inspection Reports

Under the current regulations the completed ACR's are submitted to the inspectors' accredited scheme. But they are not lodged on the central register operated by Landmark Information Group and currently used for the mandatory lodgement of Energy Performance Certificates (EPCs) and Display Energy Certificates (DECs). As there is currently no mandatory requirement to lodge an air conditioning inspection report on the Landmark register there is no centralised way to monitor that the inspections were undertaken, the reports were given to the relevant persons or that any carbon was saved as a result of the reports. It also makes enforcement by the Trading Standards Officials (TSO's) difficult and time consuming due to the report submissions being distributed with different accreditations schemes.

The Communities and Local Government 's (CLG's) '*Making better use of energy performance certificates and data* 'consultation and the accompanying impact assessment, *'Mandatory lodgement of air conditioning inspection reports'* proposes mandatory lodgement of all air conditioning inspection reports on the Landmark system. They identify various benefits from the introduction of mandatory lodgement:

improved compliance,

better quality control,

enhanced enforcement

standardisation of summary reports

greater energy savings arising from the implementation of energy saving measures

data for future benchmarking.

CIBSE has conducted research into several case studies of buildings which have;

a) had an air conditioning inspection and

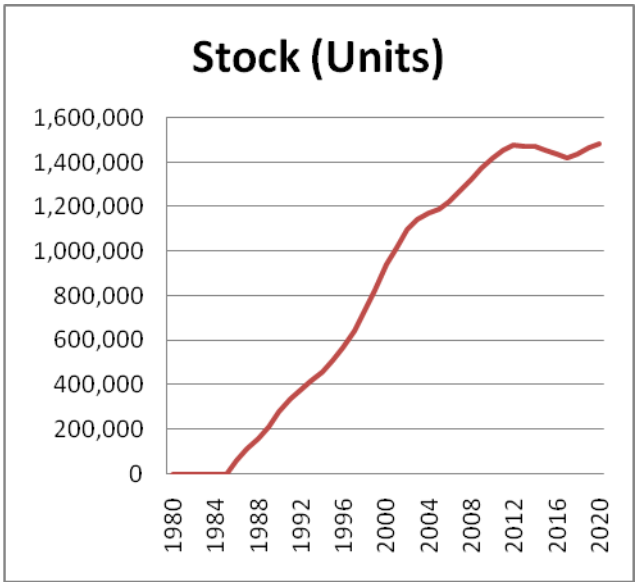
b) voluntarily acted on the recommendations of the report.

The current enforcement of ACI's is not adequate and despite CIBSE initiatives to invest in raising awareness and importance of the policy to both the public and to the TSO's who are responsible for the enforcement, uptake is still poor. It is claimed that the TSO's are currently not able to spare time from their demanding workload. As a consequence building owners and building managers may not benefit from potential savings these reports would have otherwise highlighted.

With mandatory lodgement, however, all records of ACR's would be stored on a centralised system similar to the method used for EPC's and DEC's. This would enable TSOs to identify whether buildings have had the necessary inspections far more easily than at present.

So how does non compliance cost UKplc?

The lack of inspections and the failure to adequately enforce the regulations also has a cost impact.

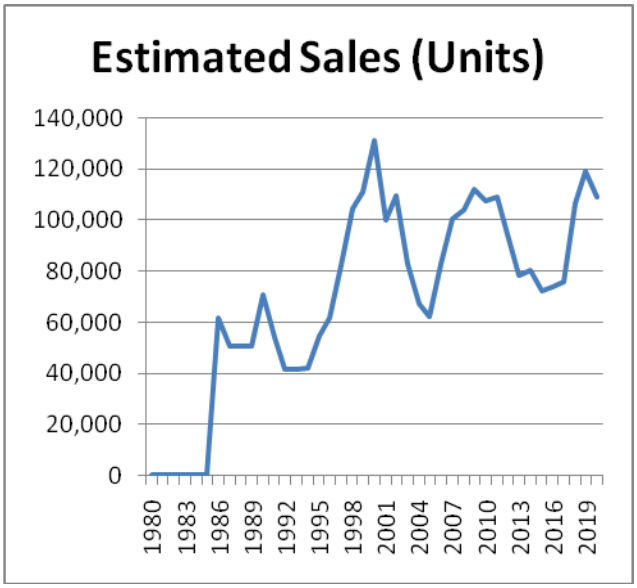


It costs the businesses who do not have inspections. The inspection and accompanying report tells operators whether their systems are operating as efficiently and cost effectively as possible. So non compliance costs non complying companies a real opportunity to cut costs and increase profits.

It costs the environment, because of the excessive energy use and associated carbon emissions.

And it costs the UK any chance of meeting its statutory carbon dioxide emissions reduction targets.

The impact of air conditioning on energy consumption.



(Graphs taken from DEFRA's Market Transformation Programme (MTP))

The Department for Environment Food and Rural Affairs (DEFRA) have estimated that with the current trend in **ALL** air conditioning sales, the total UK stock will possibly reach up to 1.5 million units by 2020 compared to 280,000 in 1990. During that same period we could expect an increase of energy use to be 6,600 GWh/year or 3.6 MTCO2.

CIBSE currently estimates that fewer than 5% of the systems that qualify for inspection have had the survey undertaken. This would mean that potentially, approximately 50,000 qualifying systems from the 2009 deadline still need to be surveyed.

The EPBD Regulatory Impact Assessment (RIA) 2007 suggested that the 2007 energy consumption for domestic and non-domestic air conditioning systems was approximately 14.4TWh and rising year on year. Based on this figure, and taking an average value of15% CO2 saved per project based on our case studies below, we can roughly estimate a 2.1TWh annual energy saving or around 1.15 million tonnes CO2 per year.