4.3.7 Compressed air systems (CAS)

Compressed air is widely used as either part of a process or to provide mechanical energy. It is widely used where there is risk of explosion, ignition, etc. In many cases, it is used as an integral part of the process (such as providing low quality nitrogen as an inert atmosphere, and for blowing, moulding or mixing), and it is difficult to assess its mechanical efficiency. In some cases, e.g. where driving small turbines such as assembly tools, it has a low overall efficiency,and where there are no health and safety constraints, replacement with other drives may be considered (see Section 3.7).

25. BAT is to optimise compressed air systems (CAS) using the techniques such as those in Table 4.6, according to applicability:

Technique	Applicability	Section in this document
SYSTEM DESIGN, INSTALLATION or REFURBISHMENT		
Overall system design, including multi-pressure systems	New or significant upgrade	3.7.1
Upgrade compressor	New or significant upgrade	3.7.1
Improve cooling, drying and filtering	This does not include more frequent filter replacement (see below)	3.7.1
Reduce frictional pressure losses (for example by increasing pipe diameter)	New or significant upgrade	3.7.1
Improvement of drives (high efficiency motors)	Most cost effective in small (<10 kW) systems	3.7.2, 3.7.3, 3.6.4
Improvement of drives (speed control)	Applicable to variable load systems. In multi-machine installations, only one machine should be fitted with a variable speed drive	3.7.2
Use of sophisticated control systems		3.7.4
Recover waste heat for use in other functions	Note that the gain is in terms of energy, not of electricity consumption, since electricity is converted to useful heat	3.7.5
Use external cool air as intake	Where access exists	3.7.8
Storage of compressed air near highly-fluctuating uses	All cases	3.7.10
SYSTEM OPERATION and MAINTENANCE		
Optimise certain end use devices	All cases	3.7.1
Reduce air leaks	All cases. Largest potential gain	3.7.6
More frequent filter replacement	Review in all cases	3.7.7
Optimise working pressure	All cases	3.7.9

Table 4.6: Compressed air system techniques to improve energy efficiency