carbonblue *reducing energy, costs & emissions*

# *Fluorescent Lighting – conversion to high frequency*

## *Headline Benefits . . .*

- ***Reduces energy consumption***
  - ***Reduces electricity bills (cost of conversion is covered by the bill savings)***
    - ***Reduces associated CO2 emissions***
      - ***Reduces carbon footprints***
        - ***Improves light quality and working environment***
          - ***Reduces maintenance costs***
            - ***Attractive pay-back periods (qualifies for Carbon Trust interest free loans)***

| 1 | **Reduces energy consumption** |
|---|---|
| • | Existing T8 Standard Halophosphate lamps (tubes) are replaced by energy efficient, lower wattage, T5 Triphosphor lamps. Whilst the T5 lamp wattage is less, the actual light output is slightly more. |
| • | Standard electro-magnetic ballasts (essentially a variable voltage transformer) operate at a frequency of 50hz. These are replaced by high frequency, high efficiency electronic ballasts which operate at over 28,000hz and which consume significantly less power. |
| • | By replacing the lamp and installing high frequency ballasts the total energy saving is between **27%** and **45%** depending on the length of the lamp. |

| 2 | **Reduces electricity bills** |
|---|---|
| • | With a reduction in energy consumed there is a proportionate reduction in cost |
| • | With a significant reduction in the electricity bill, the cost of converting is offset, resulting in financially attractive pay-back periods. |

| 3 | **Reduces associated CO2e emissions** |
|---|---|
| • | For every kilowatt hour of electricity 0.54 kilograms of climate changing CO2e are emitted into the atmosphere. |
| • | **For example . . .**<br>• 25 x 4ft fluorescent fittings, with 4 standard tubes per fitting and standard ballasts per fitting.<br>• Lights on from 8am to 8pm, 5 days per week, 52 weeks per year.<br>• Applying official DEFRA conversion factors, this results in 14,350 kilograms of CO2e being emitted into the atmosphere.<br>• **Converting these fittings to high frequency with energy efficient T5 tubes results in a reduction of 4,370 kilograms of CO2e being emitted as a direct result of taking this simple action.** |
| • | Even if just 1,000 small to medium businesses (SMEs) took this action, then well over 4 million kgs of climate changing gases would ***not*** be emitted into the atmosphere. (96% of all UK businesses are SMEs !) |
| • | So quite contrary to the *"My business isn't big enough to make a difference"*, the small to medium sized business community has a major part to play in contributing to making the UK a low carbon economy with all the accompanying benefits. |

| 4 | Reduces carbon footprints |
|---|---|
| • | Whether or not a business cares about it's carbon footprint, there is increasing pressure on businesses in supply chains (which is the majority) to demonstrate that they are not only environmentally aware but are taking positive action to reduce their carbon footprints. |
| • | Likewise, there is growing pressure from existing customers, and prospective new customers are being increasingly influenced by the environmental stance of businesses. Every single day there is media coverage on the issue, and it is now a major item for government. |
| • | In an increasingly competitive world businesses can not afford the competitive disadvantage of being seen to be uncaring about their environmental impact. |

| 5 | Improves working environment |
|---|---|
| • | High frequency running gear operates at in excess of 28,000 hz compared to standard low frequency of 50 hz. When running at 50 hz the almost imperceptible flicker can cause the early onset of tiredness, eye strain and headaches especially where 50 hz computer screens are in use. |
| • | As a result of this there can only be a positive impact on productivity, and the potential for reduced absenteeism. |
| • | Replacing standard lamps with triphosphor cool white lamps results in an improved light quality as they operate at a higher colour rendering index. The higher this figure, the more lively and vivid people and objects appear giving an overall enhanced working environment. |
| • | In the event of lamp failure then the lamp is automatically switched off thereby preventing annoying lamp flickering and flashing, which if left unchecked can also lead to ballast overheating and failure. |

| 6 | Reduces maintenance costs |
|---|---|
| • | The conversion equipment we install provides what is termed as a 'soft start' which prolongs equipment life. |
| • | Degradation of light output over the life of the lamp is less than half that of standard low frequency lamps meaning that the quality of light is more consistently maintained. |
| • | T5 energy efficient triphosphor lamps have a life expectancy of more than 2.5 times that of a standard T8 lamp and yet cost only a third more. In any event, the main cost in lamp replacement is not so much the lamp itself, but the disruption and time taken to replace the lamp. |

| 7 | Attractive pay-back periods |
|---|---|
| • | Upgrading existing low frequency fittings is quick with minimal disruption and at a fraction of the cost of replacing the entire fitting. |
| • | Pay-back periods are typically between 24 and 36 months, after which there is a very real net gain. |
| • | This conversion equipment qualifies for interest free loans from the Carbon Trust |