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Cold Cathode Technical Bulletin

Conventional fluorescent lamps are properly referred to as Hot Cathode Fluorescent, because the cathodes in a conventional lamp are pre-heated. Cold cathode lamps are not pre-heated, but are instead self-heated. These self-heated cathodes are much more durable than pre-heated cathodes, which offers numerous design advantages:

- Cold cathode lamps can be turned on and off an unlimited number of times. Conventional fluorescent lamps are severely affected by being turned on and off, and will burn out rapidly if they are turned on and off quickly or frequently.
- Cold cathode lamps can withstand virtually unlimited vibration. Conventional fluorescent lamps will fail rapidly in low to moderate vibration.
- Cold cathode lamps have longer lamp life than conventional compact fluorescent lamps. Cold cathode lamps do not normally burn out until long after their rated life is past. Our cold cathode rated lamp life of 18,000 hours is based upon the lamp becoming about 30% dimmer than they were when new. Conventional compact fluorescent lamps typically have a rated life of 6,000 to 10,000 hours, sometimes less, and the rated life refers to the lamp burning out. It is common for conventional fluorescent lamps to be upwards of 70% dimmer at their end of life than they were when new, so the usable life of a conventional fluorescent lamp can be much shorter than its rated life.
- Most fluorescent lamps cannot withstand temperature variations well—either hot or cold. Anything higher or lower than room temperature will usually cause a fluorescent lamp to be much dimmer. At very hot and very cold temperatures, conventional lamps may not light at all, and their life can be severely shortened. Havis cold cathode lamps include proprietary new technologies that allow the lamps to turn on normally, reach full light output, and maintain full rated life regardless of environmental conditions. This new technology is specifically and exclusively designed to work with our cold cathode lamps.
- Cold cathode lamps can be made much smaller than hot cathode lamps, and in a much greater variety of shapes. This allows for higher efficiency designs with better light control than conventional fluorescent lamps. Because cold cathode lamp design can be optimized for the application, cold cathode lamps can operate with lower current draw than conventional fluorescent lamps, and be incorporated into smaller fixtures with many more design features.
- Light quality for any fluorescent lamp is determined by the quality of the phosphor coating inside the lamp. The optimal lamp color temperature for low-light visibility is 4,500K. Most conventional compact fluorescent lamps are formulated to 2,700K or 3,000K, and it is very difficult to find good quality compact fluorescent lamps with a more suitable color temperature.

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Havis cold cathode lamps are custom manufactured to our specifications, and produce light at 4,500K. This makes our cold cathode lamps uniquely well-suited for use in all environments, especially low-lighting applications, such as compartments.

- Cold cathode lamps turn on and off instantly. Conventional fluorescent lamps can be turned on rapidly (though not instantly), but doing so severely shortens lamp life. So, to preserve lamp life, most conventional fluorescent lamps have a 1-2 second pre-heating delay before turning on, and may flicker or flash on and off during startup.

- Cold cathode lamps are operated at high frequency, so light quality will always be excellent, and they will never flicker. Hot cathode lamps can flicker, depending upon how they are operated, when they are first turned on, and when the temperature is low.