Our Ballast's International Marketability

Evaluation of any technology starts with the simple principle.

Imagine what the technology will do for you;
Better still, imagine what it will do for your competition !!!

*** Read the links marked in red to get a quick insight into the full market potential of the technology**

Introduction:

Commercial products based on pioneering technologies have immense marketability around the globe, and in addition, they ensure high return on investment for the manufacturer. From spearheading penetration into virgin markets to establishment of the product brand in existing ones, unique products provides multifaceted opportunities for MNC's to create virtual market monopolies. Lumenteck is presenting such a unique Electronic Ballast technology, whose pioneering status and uniqueness is made apparent by its adherence to such standards; which emphasizes its universal application.

Marketability from the view of Standards:

Showcased here is the Electronic Ballast Technology in the prototype form in three versions (version 1, 2 and 3; all with the model number "EB-'0'-H/5" and Serial number R&H- 999), developed, successfully tested and certified for the first time ever (from internationally approved laboratories), as per the important parameters of Indian Standards for testing of Electronic Ballasts. The "Bureau of Indian standards"(BIS)formulated the Indian Standards for Electronic Ballast for Tubular Fluorescent Lamps [IS 13021 (Part 1 & 2)1991] and this standard has been derived from the corresponding International Electrotechnical Commission (IEC) Standards, which is followed uniformly around the globe.**Even though the Indian standards had been formulated way back in the year 1991, till date there is no Electronic Ballast in the Indian market adhering to the Indian standards in full.** The Indian lighting industry is estimated to be worth ~20 billion US Dollars/year, and has the presence of numerous major Indian and Inter national manufacturers and marketers. **It must be noted here that, the global market potential of the Electronic Ballast Technology presented is further highlighted by the absence of an Electronic Ballast in the International lighting market adhering to the IEC standards; the ones from which the Indian standards had been directly derived. For Electronic Ballast for Tubular Fluorescent Lamps, IS 13021 (Part 1 & 2)1991 formulated by the "Bureau of Indian standards"(BIS), is the only standard that is followed in India** (To know more about the Indian and IEC Standards of the Electronic Ballast and the Tubular Fluorescent Lamp (TFL); refer the link"Ballast Standards and Lamp-Ballast Compatibility").

The Indian Standards specifications for Tubular Fluorescent Lamp's [IS 2418] have been derived from the corresponding International Electrotechnical Commission (IEC) Standards for Tubular Fluorescent Lamps, and this is the only standards followed in India with respect to Tubular Fluorescent Lamp's. The Electronic Ballast technology has been developed by us for perfectly compatible operation with TFL adhering to Indian Standards specifications for the same. The direct derivation of the Indian standards for Tubular Fluorescent Lamps from the corresponding IEC standards ensures global standardisation for TFLs made as per the Indian standards; with respect to performance parameters and specifications. **Due to the parentage of both the Electronic Ballast's and the TFL's Indian standards to the corresponding IEC standards, an Electronic Ballast Technology developed as per Indian standards for compatible operation with a TFL of Indian standards, would indeed ensure that, this Electronic Ballast technology would automatically be compatible for operation with TFLs of International Standards too. This compatibility of our Electronic Ballast technology directly opens up the global market for the product.**

Marketability from the view of Technology's Universality:

As the standards for Tubular Fluorescent Lamps (both IEC and IS) had been primarily formulated taking into account the operation of the TFL with Magnetic Ballast; creating the perfect compatibility and harmony between the Electronic Ballast and the Tubular Fluorescent Lamp it operates was the toughest challenge when it came to the technology development of the Electronic Ballast. The stringent nature of the standards for the Electronic Ballast ensures that an electronic Ballast technology developed as per these standard ensures long life for both the Electronic Ballast and the Tubular Fluorescent Lamp it operates, in addition to the generation of best results and absolute safety for the end user.

We chose the 40 W Tubular Fluorescent Lamp-TFL (this 40 W TFL is 4 feet in length and is commonly known as “T12 Fluorescent lamp” in the international market) as the standard reference lamp model for development of our Electronic Ballast Technology, as this type of LFL is the one which has the biggest market share in the Indian lighting market. There are 11 different wattages of Tubular Fluorescent Lamps in the international market (from 4 watts to 80 watts) and the principle of operation of all the LFL’s are the same; irrespective of their wattage.

This means that, this Electronic Ballast Technology which is developed for perfectly compatible operation with one wattage of LFL as the "reference lamp", can be “fine tuned” or directly “customized” in a cost effective manner, without any further technology development (by adjusting the values of the components and coils in the Electronic Ballast circuitry) with ideal performance results, for perfectly compatible operation with all the different wattages of Linear Fluorescent Lamps in the entire LFL range from anywhere in the world, and for different input line voltages. Naturally, the buyer of technology can file independent patents in their names directly for all the so “fine tuned” wattages of electronic ballast technologies that are based on these circuitry, in all countries of choice, based on their marketing requirement. The manufacturers entire requirements from this product segment is so covered.

You may also note that all the 3 versions of the electronic ballast technology have low harmonics distortion and high power factor even from starting voltage (the voltage at which the ballast starts and operates the lamp properly). This shows the stability of the circuits.

Compatible to A2BAT

Compliance of the three versions of the electronic ballast technology is much above the requirements of the proposed A2BAT. A1BAT is for dimmable ballasts.

Total Harmonic Power (THP) for versions 1, 2 and 3 is 0.002, 0.001 and 0.004 Watts. CELMA (A2BAT) standards allow a maximum of 0.5 watt power loss for High performance electronic ballasts. The maximum power loss for our versions of electronic ballast technology is less than 1% of what is allowed by the standards for A2BAT. This is possible as the THD (phase A current) is less than 3%.

The version 3 draws 39.65 watts while delivering a Ballast factor (Lumen factor) of 0.91. Under the new Regulation 245/2009 the basis for assessing ballasts for fluorescent lamps has changed from overall system input

power to ballast efficiency. To ascertain the efficiency of electronic ballast, the lamp output power (as taken from the lamp data sheet) is divided by the total input power. In this case its 40 Watts/ 39.65 = 1 + (100% +). The A2BAT value for ballast efficiency is 89.5% only.

It must be noted here that versions 1 and 2 draws a power of 44.8 Watts and 44.66 Watts delivering a lumen factor of 0.97 and 0.92 respectively. The ballast efficiency for A2BAT is complied by version 1 & 2 also. Lumen factor requirement is only 0.9 as per the international standards, and as detailed above, if so desired, these versions can be just fine tuned for that lumen output; with reduced input power.

Other parameters of performance for High performance electronic ballast like constant light output, re-strike after lamp change, repeated starting, harmonics, ballast factor etc are basic parameters that are very much covered by the compliance to the standards we have achieved. You may read the test reports and explanations for full comprehension.

Marketability from the view of cost:

The technology has been developed in a highly cost effective manner, and the components list of the prototype's and its cost is available in the link "Electronic Ballast components list & Cost". The technology has been developed keeping the cost at the minimum level possible, and only indigenous components which are freely available in the market has been used in the development of the prototypes. These factors naturally increase the marketability of the product in a competitive market environment. The details of the proposed technology transfer including the patent details are specified in the link "Mode of Technology Transfer".

A word about "True" Power Saving:

The power saving aspect of the technology presented should be analyzed in tandem with the BMI power profiler snap shots presented here for all three versions.

BMI Power profiler snap shot for version 1

BMI Power profiler snap shot for version 2

BMI Power profiler snap shot for version 3 NEW

The Total Harmonic Distortion (THD-Phase A Current) of Version 1, 2 and 3 is 2.4%, 1.3% and 2.9 %, and their Total Harmonic Power (THP) is 0.002 Watt, 0.001 Watt and 0.004 Watt respectively. Power saving is "true" only when there is no hidden power loss, and hidden power loss is there for Electronic Ballast's in general as their operating frequency is usually a high multiple of the input line supply frequency. **For the Electronic Ballast technology developed by us, we have kept the THD of the Phase A current less than the input line supply THD (which as per the Standards can be up to 3%) , and this ensures that the power saving is indeed "true", and our claim of power saving is not a mere claim of "apparent power" saving. The input power drawn by a TFL of 40 Watts when operated with a Magnetic Ballast is approximately 55 watts. The input power drawn by a TFL of 40 Watts when operated with version 1 of our Electronic Ballast is 44.80 Watts, the input power drawn by a TFL of 40 Watts when operated with version 2 of our Electronic Ballast is 44.66 Watts and the input power drawn by a TFL of 40 Watts when operated with version 3 of our Electronic Ballast is 39.65 Watts.** In addition to this, version 3 has a power factor of 1, which has been considered to be unachievable in the Electronic Ballast industry. The power factor for Version 1 and 2 is 0.98 and 0.99 respectively. For all the three versions, the Total Harmonic Distortion (THD-Phase A Current) is within 3% and hence the power factor readings observed is true. (Kindly refer the BMI power profiler snap shots of all the versions to get the comprehensive picture).

The application of the product is there in large numbers in residential, commercial and industrial sectors. Irrespective of the sector in which the product is used, the marketability of the product is multiplied manifold on a global level, as energy saving is one aspect about which the consumer is fully conscious of. **Emphasis on energy saving would make the consumer aware that the investment made while purchasing such an Electronic Ballast is worthwhile, as the return on such an investment would come within a short time in the form of energy saving itself. Since the "Total Harmonic Distortion" generated by the product is less than the limit of input line supply "Total Harmonic Distortion", the life of other electronic and electrical products operated on the same supply line would naturally be increased.**

Ballast Standards and Lamp-Ballast Compatibility
Electronic Ballast Components List & Cost
Mode of Technology Transfer
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