

# TACKLING THE GROWING COOLING DEMAND THROUGH INNOVATIVE APPROACHES

R.K.MEHTA  
RAMA



## Background

India is a tropical country with low penetration of comfort Air conditioning and it is expected that the demand will increase, but the rate of growth during the last 5 years had been around 7-8% per year.

Room AC constitutes 70 to 75 % of the HVAC market



## Status in India

- Standards and Labeling programme initiated by BEE to regulate the market has helped in improving energy efficiency
- Programme was initiated in 2008
  - was made mandatory from 2010.
  - All manufacturers brought on the same platform
  - Has gone through 5 changes every two years and the 6<sup>th</sup> change is planned in 2018. It is one of the most stringent programme in the world
  - Industry has wholeheartedly participated to make the programme a success.



## The Market

- The penetration of Room AC is around 4 to 5 % and has only marginally grown.
- Industry feels that the affordability is the major deterrent in the growth
- The average price of AC has grown by 35 to 40 in the last 5 years though the commodity prices were stable
- Customers understand the importance of efficiency, however the first Purchase price is the deciding factor



## Important elements of efficiency

- At engineering level there is no break-through
- The adoption of known technologies such as DC prime movers and heat exchangers has improved the EER.
- Micro-channel as heat exchanger has challenges in the Indian environment due to corrosion

## External Environment - Power

- The power quality in India continues to be poor due to which.
  - ▣ The upcountry consumer is reluctant to purchase Inverter AC due to high possibility of drive failure
  - ▣ With wide fluctuations in voltage the power consumption increases by 7-8
  - ▣ Usage of voltage regulator resulting in additional consumption of energy of 2-3%

## Manufacturers perspective

- As of today the sale of **Three star** units are around 60 % of the market & **Five star** sale is less because of the cost difference
- We need to balance between Affordability, Technology and Energy efficiency
- *With the higher cost, the affordability of the Air conditioner and the penetration will get affected which is not the intention.*



## Other means to save energy

- Usage pattern will play a role
  - ▣ Temperature setting of 25 to 26 deg C is recommended
  - ▣ Intelligent controllers
  - ▣ Central controllers in multi unit locations
- Servicing and cleanliness of heat exchangers
- At a fundamental level Building designs which will reduce the heat load will have the Maximum impact



## Conclusion

- Refrigerants play a limited role in global warming and Energy plays a major role
- The technology has not changed of Air conditioners except for changing from AC to DC
- Power conditions needs to be addressed
- Maintenance of systems is critical, skill development should be taken on priority
- Balance between Cost and Affordability is important
- Need to include other appliances in energy efficiency programme in energy efficiency programme.

# Thank You