Chill compartment compensation.

14/12/2015

For Stakeholder Meeting

Review Eco-design and Energy Label Cold Appliances

On behalf of CECED,

M. Janssen,

Re/genT BV, the Netherlands

Current situation / proposed reference

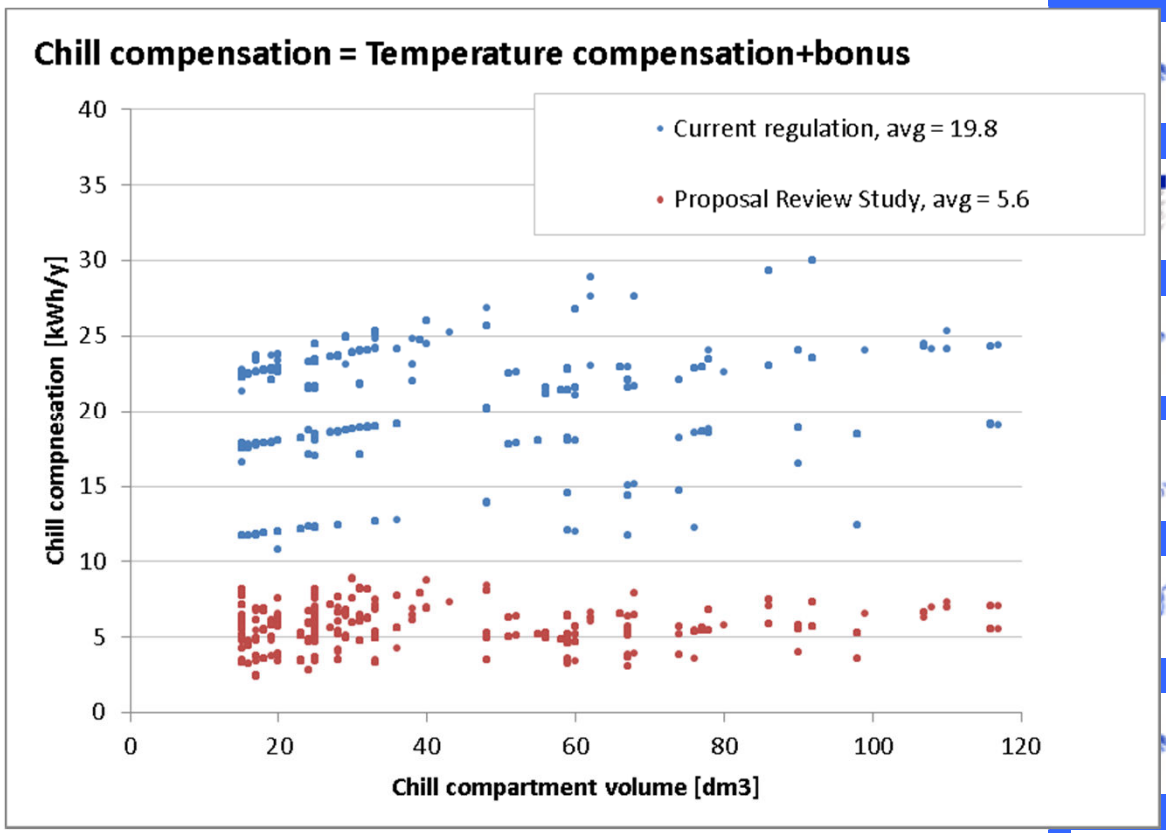
- Proposed reference line in review study:

$$q_{ref} = D \sum_{c=1}^{n} A_c B_c C_c \left(\frac{N_c}{V_c} + r_c M_c\right) \text{ with } r_c = \frac{T_a - T_c}{20},\ C_c = C_1 \frac{V_c}{V}$$

- For chill compartment, N_c and M_c of fresh food are applied
- No compensation provided so far on the basis that:
  - No plausible explanation has been provided; See note 15116/CE12/V5
  - Average ambient temperature < 25; holds for all compartments
- Target temperature chill changes from 0 to 2 °C in the new global standard
- Temperature compensation r_c reduces from 1.25 to 1.1
- Combined effect:

Current situation / proposed reference

- Base line is chill compartment = separate fresh food compartment with volume of the chill
- Neglect volume effect
- CECED data base 2014/2015



CECED requests chill compensation

- Without: severe difficulties in meeting efficiency targets
- Chill offers significant advantages for food preservation not recognized in the label
- Chill is the only fresh food compartment fulfilling French listeria decree (T < 4 °C)
- Incremental energy due to temperature stability and distribution requirement
- Reduced volume

Motivation *CH* compensation

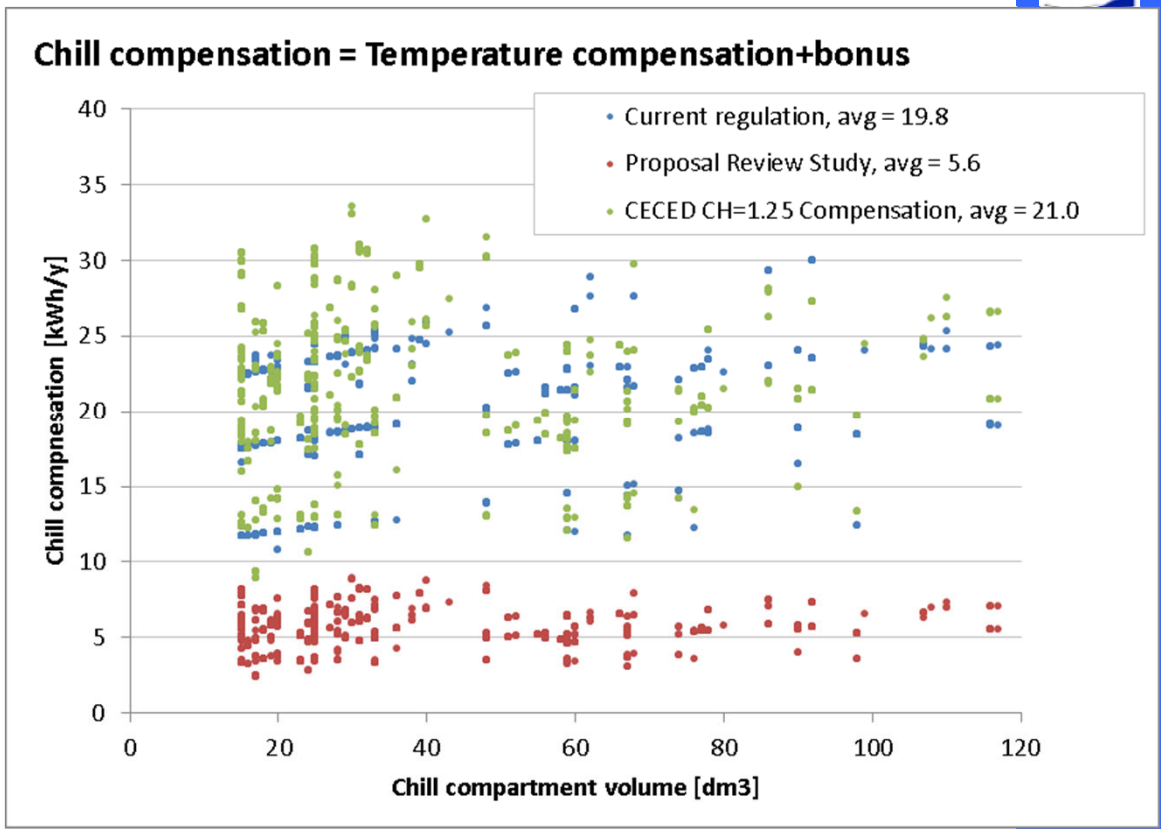
- High perishable food can be stored longer (about factor two): indirect effects:
  - Buying interval increase, reduced traffic, calculated effect of 36 kg CO2/a
  - Less food waste, reduced cost for waste recycling
  - Food cost reduction
- Reduced reproduction of microbes (French Listeria).
  - Especially below 4 °C significant reduction of microbe growth
- More global recognition, China introduced compensation for Chill

Motivation *CH* compensation

- Technical justification
  - Stringent temperature requirement (all temperatures between -2 and +3 °C, independent of thermostat setting and ambient temperature)
  - Need of additional fan (requiring extra energy and volume)
  - Requires air ducting which reduces volume
  - Requires electronic control resulting in increased consumption during compressor-off
- Difficult to compare the same product with and without chill
  - Products have been designed for chill
  - Additional measures taken due to limited compensation today (e.g. local increased insulation).

Proposed compensation

- In proposed metrics for q-ref, simplest approach is to add a compensation: $q_{ref} = D \sum_{c=1}^{n} A_c B_c C_c CH_c \left(\frac{N_c}{V_c} + r_c M_c\right)$
  - For chill compartments > 15 liter
  - Propose CH_c=1.25
- Average effect same as current
- Alternative: use *M* and *N* coefficient of frozen food



Wine cooler aspects

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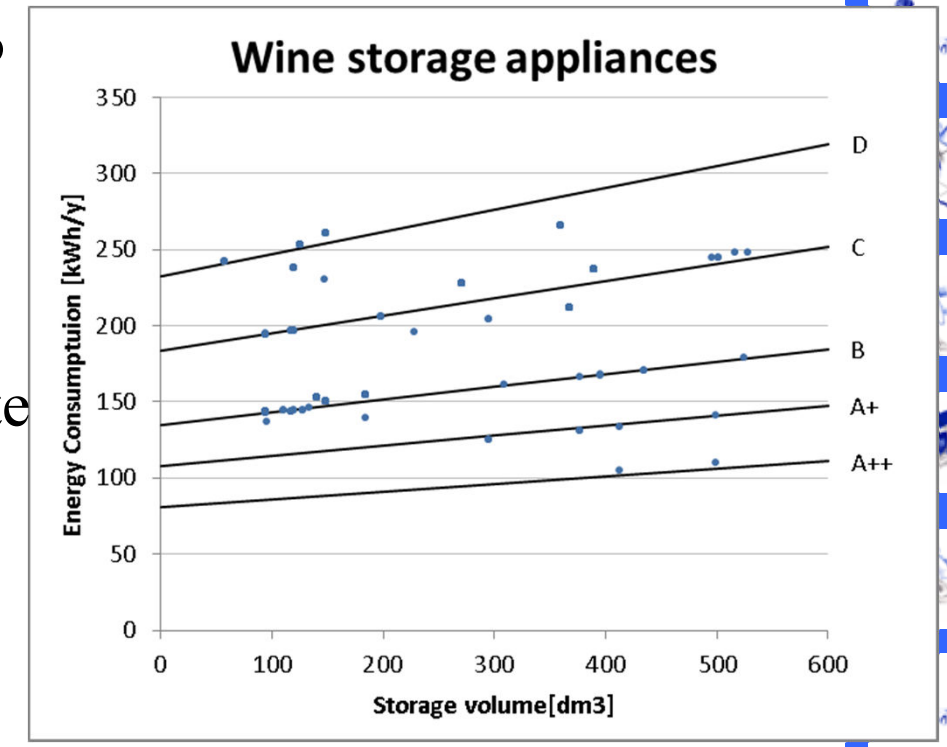
CECED comments



- CECED data base 2014/2015:
- Most products A+ and above

- Proposal of CECED for separate category not taken into account
- Technical analysis (chapter 12)
  - Feasible to improve but at high costs (long payback times)
  - Glass door improvements difficult

- MEPS for fresh food/cellars would eliminate all glass door products (important for this specific market)
- Request for glass door compensation (1.2 or above) for wine storage appliances