EPBA EUROPEAN PORTABLE BATTERY ASSOCIATION

The Authoritative Voice of the Portable Battery Industry

2016 ICBR Conference

An Action Plan on Circular Economy Outlook for the Portable Power Industry

CONTENT

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- Introduction
- Circular economy principles
- Achievements in line with CE thinking
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EPBA IN A NUTSHELL

- EPBA is the authoritative voice of the portable power industry
  - Portable primary batteries
  - Portable rechargeable batteries
  - Battery chargers

- We represent the industry's interests towards European and international institutions

- Our mission is to provide consumers with complete and sustainable power solutions across all life cycle stages from mining raw materials to end of life

EPBA IN A NUTSHELL

- EPBA Operates since the 1980's (formally known as Europile)

- Membership:
  - Manufacturers
  - National battery associations
  - OEMs

- In 2015 our members placed around 5 billion portable primary and rechargeable batteries on the market in Europe

INTRODUCTION

- The Commission’s circular economy package was published on 2 December 2015
  - An action plan on circular economy
  - Revision of the waste legislation
- The overall purpose of the circular economy action plan is to move away from a linear product model

  ↳ Focus on reuse, repairability, upgrading, remanufacturing

CE PRINCIPLES APPLIED ON PORTABLE BATTERIES

General approach

- A ‘one size fits all approach’ is not realistic

- The distinct specificity of products has to be taken into account

- The success of the Circular Economy will depend greatly on its ability to recognise differences across materials and products

CE PRINCIPLES APPLIED ON PORTABLE BATTERIES

CE PRINCIPLES APPLIED ON PORTABLE BATTERIES

Resource efficiency

- The product specific requirements of batteries has to be taken into account
  - ➲ High level of quality of materials is needed for battery production
  - ➲ Low quality → quicker depletion batteries → increased waste generation
  - ➲ Industrial symbiosis: secondary raw materials from recycled batteries can be part of other production processes:
    - electrolysis,
    - stainless steel

CE PRINCIPLES APPLIED ON PORTABLE BATTERIES

Waste management

- General minimum requirements for EPR schemes to ensure coherent and effective implementation on national level
- Common principles should focus on:
  - Transparency
  - Accountability
  - Flexibility
  - Fair competition
  - Financing
  - Harmonisation
  - Awareness raising
  - Enforcement

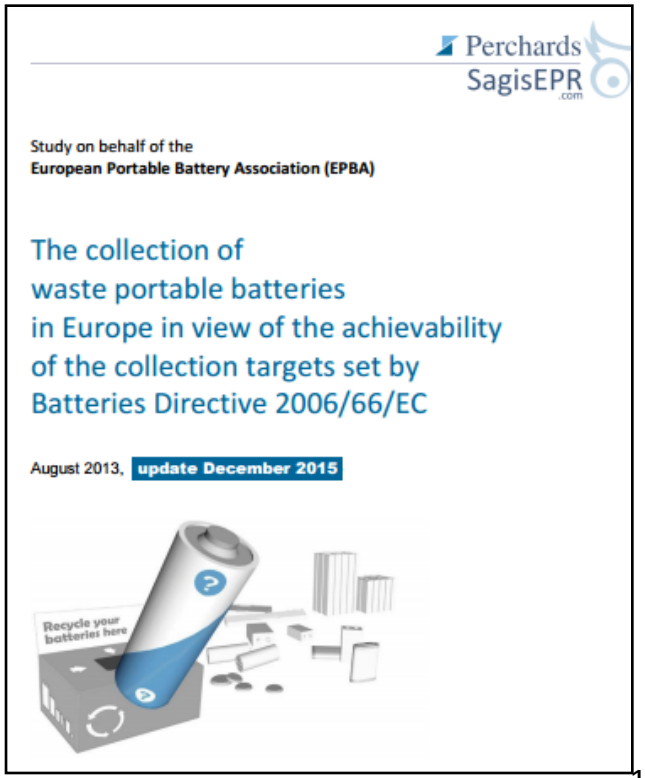
CE PRINCIPLES APPLIED ON PORTABLE BATTERIES

Waste management

-Battery specific legislation has to consider complexity of portable battery collection

-Current outlook is not positive:

- ➲ It is anticipated that only 10 MS will achieve the 45% collection target set for 2016



CE PRINCIPLES APPLIED ON PORTABLE BATTERIES

Policy framework

- Proper and efficient enforcement by authorities is needed
- Current practice with battery directive shows limited enforcement
  - Compliance with substance ban
  - Marking of batteries

ACHIEVEMENTS IN LINE WITH CE THINKING

Technological developments for portable batteries

- Continuous search for more efficient use of resources & product design

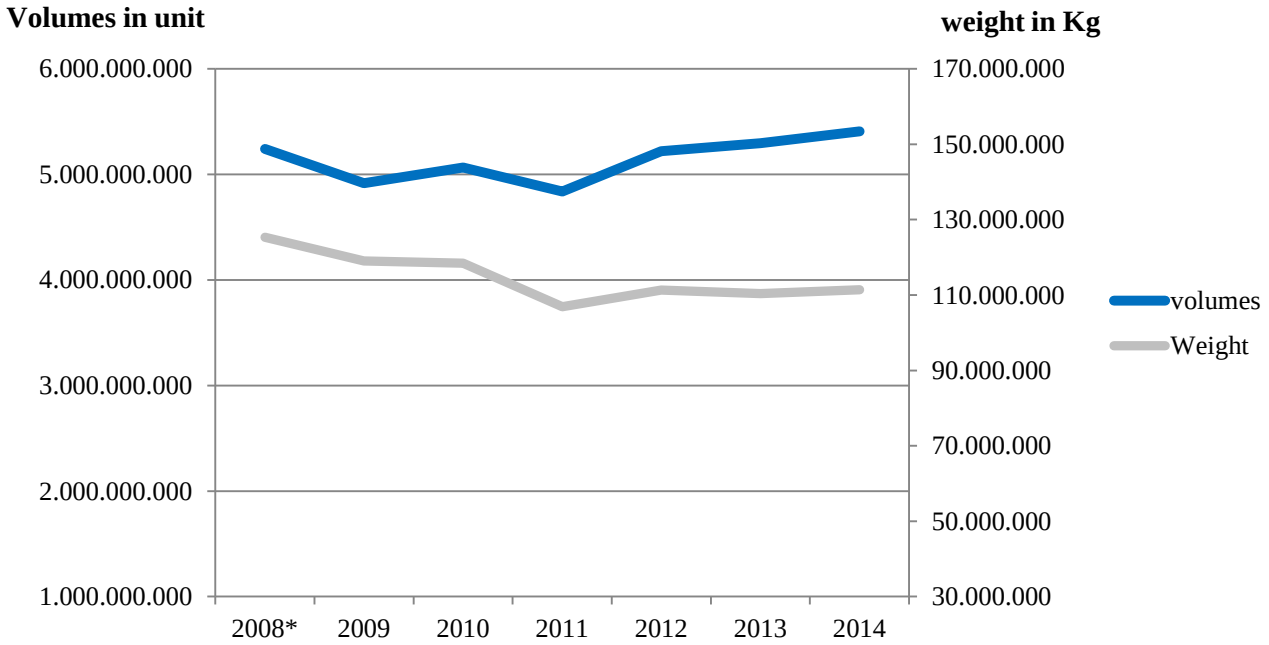
  ➲ Runtime of primary batteries has increased significantly due to more advanced materials (between 27% - 48%)
  - Special graphite
  - Zinc powder with engineered particle shape
  - Manganese dioxide with improved partical structure

  ➲ Constant rate of reduction of the weight of batteries

ACHIEVEMENTS IN LINE WITH CE THINKING

Technological developments for portable batteries

Decoupling weight/volume



ACHIEVEMENTS IN LINE WITH CE THINKING

Technological developments for portable batteries

- Rechargeable batteries
  - Initial charge is held for a longer time
  - Higher number of charging cycles
- Improved longevity of batteries due to mechanical changes
  - Increase in internal volume of batteries
  - Thinner plastic seal and separator papers
  - More efficient separator construction
- Increased shelf life of batteries
  - Increased purity of raw materials
  - New additives for protection against corrosion

} Improved leakage protection

ACHIEVEMENTS IN LINE WITH CE THINKING

Other developments

- Progress in appliances which become more energy efficient
- Continuous focus on consumer information for making informed decisions on the appropriate type of battery
  - Type of application
  - Usage pattern

FUTURE DEVELOPMENTS

- Continuous trend towards miniaturisation of batteries in function of the progress of appliances

- Energy content will continue to increase with use of advanced raw materials and mechanical improvements

- Management systems of battery packsare constantly improved resulting in higher efficiencies

CONCLUSIONS

- The members of EPBA will continue their research to enhance the performance and decrease the environmental footprint
- EPBA is committed to contribute to apply circular economy thinking to the portable battery industry
- To ensure a successful implementation, the product specificity of portable batteries should be taken into account
- EPBA will continue to work closely with the institutions on policies which affect the portable power industry

Thank you!

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