Polymer-coated Steel for Beverage Cans

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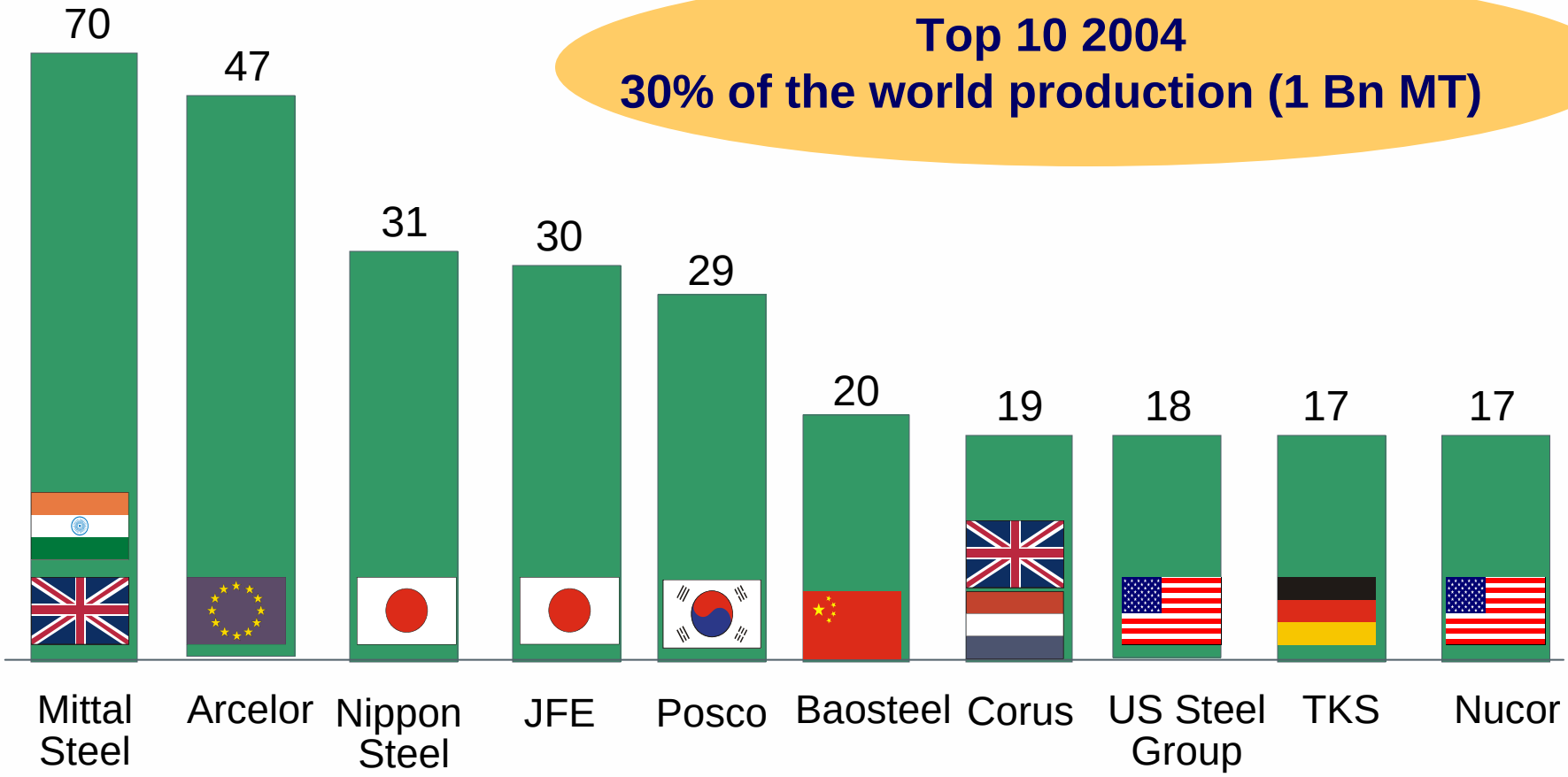
Groupe Arcelor

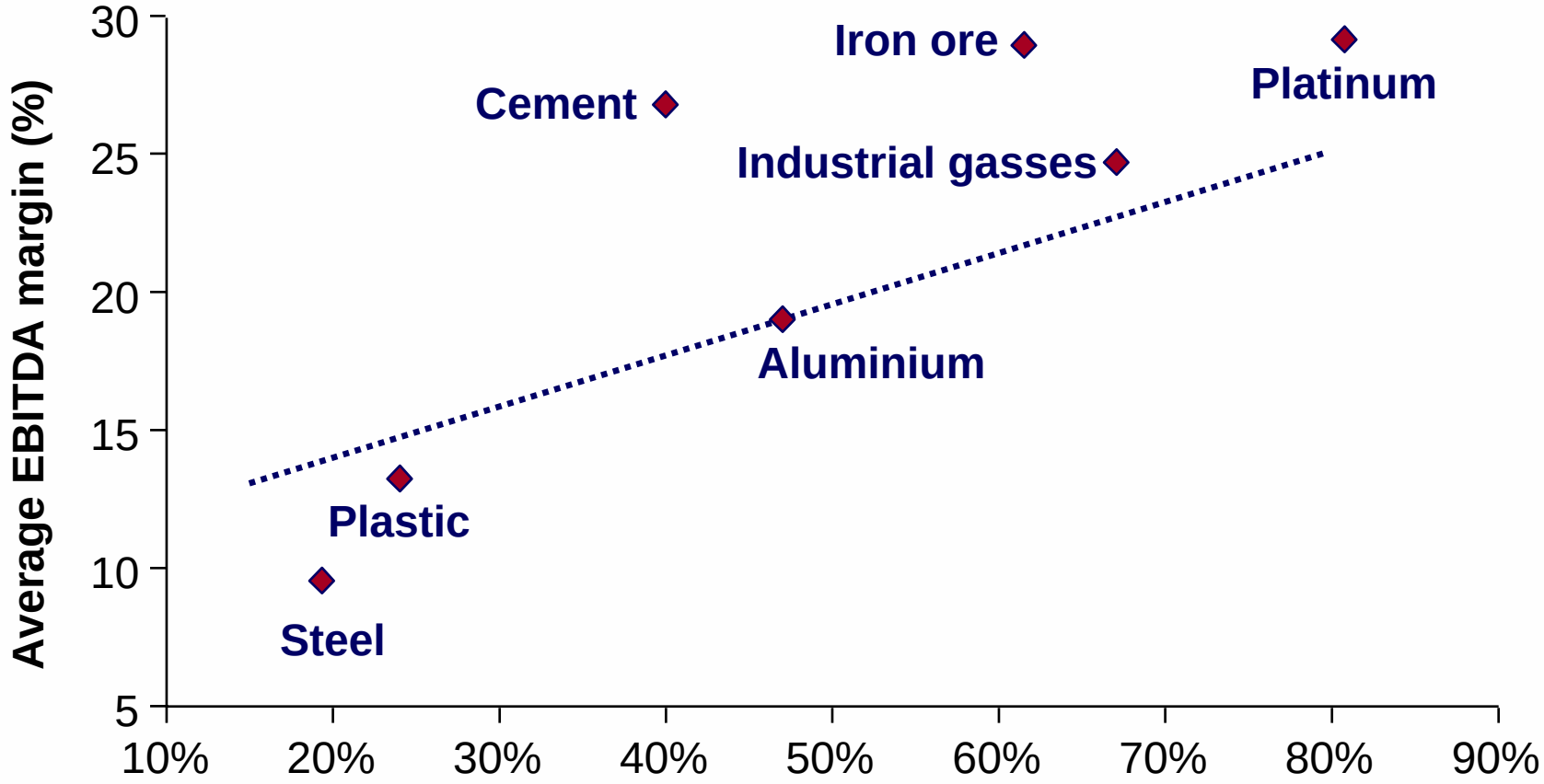
STEELIUM

A few giant dwarves emerged in the steel industry

Top 10 2004
30% of the world production (1 Bn MT)



But steel remains less concentrated than competing sectors, and therefore less profitable



Steel solutions for a better world

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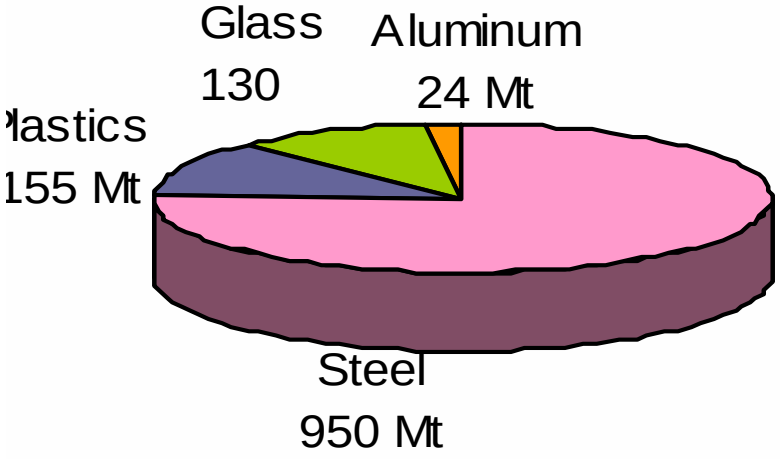
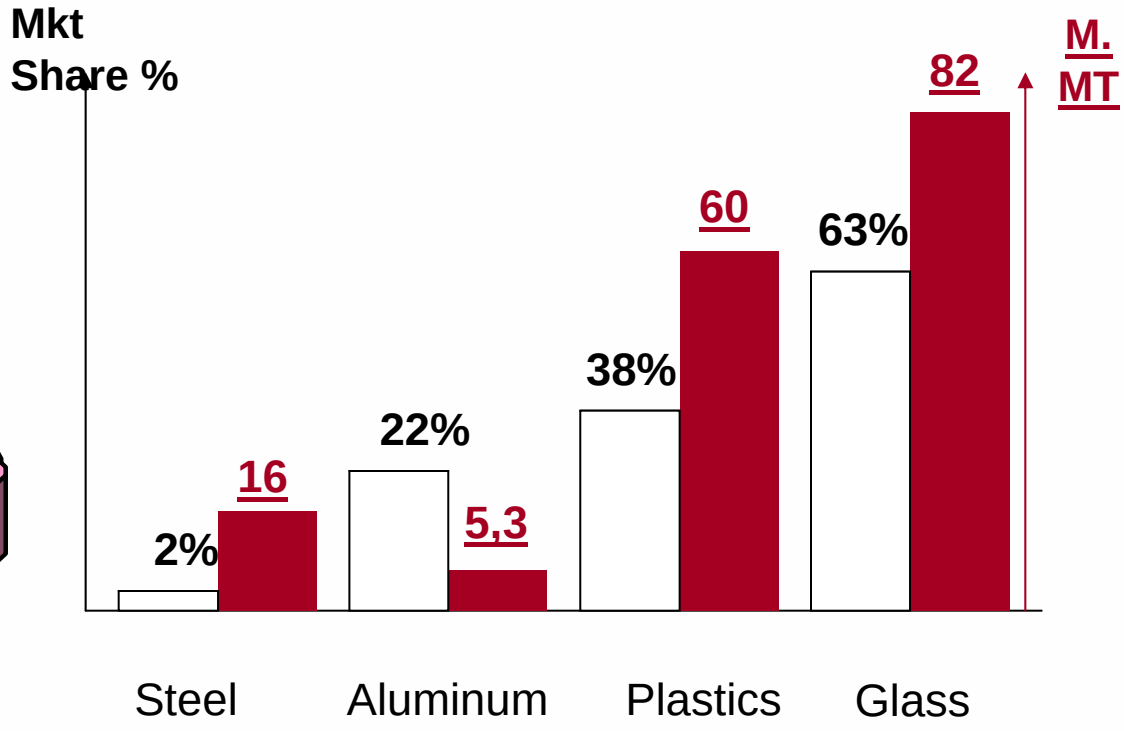
Source: Exane

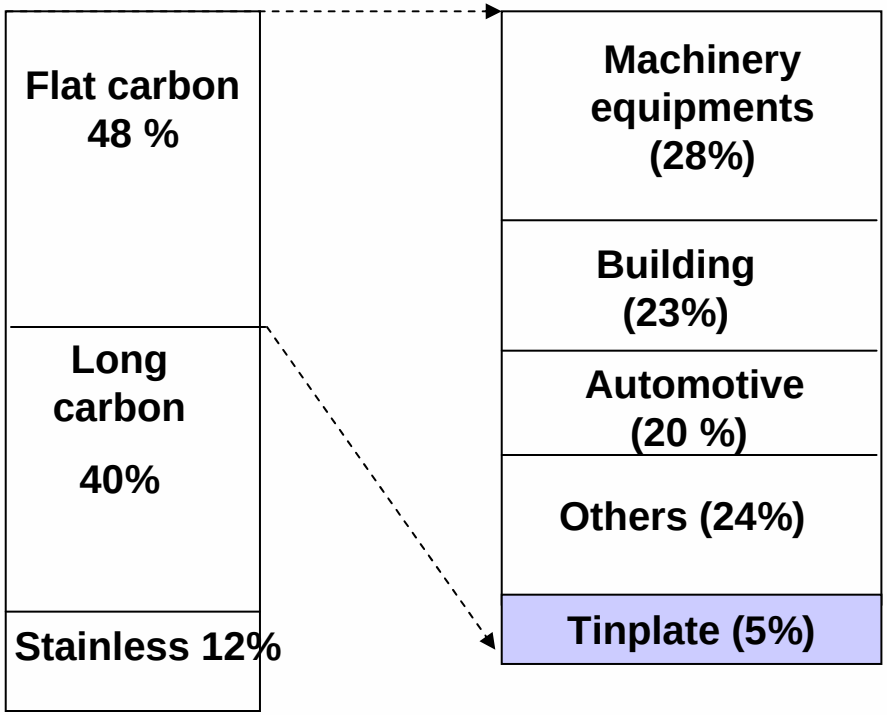
Among materials for Packaging, steel is the biggest production, but packaging is a more significant outlet for other materials…

Global world consumption





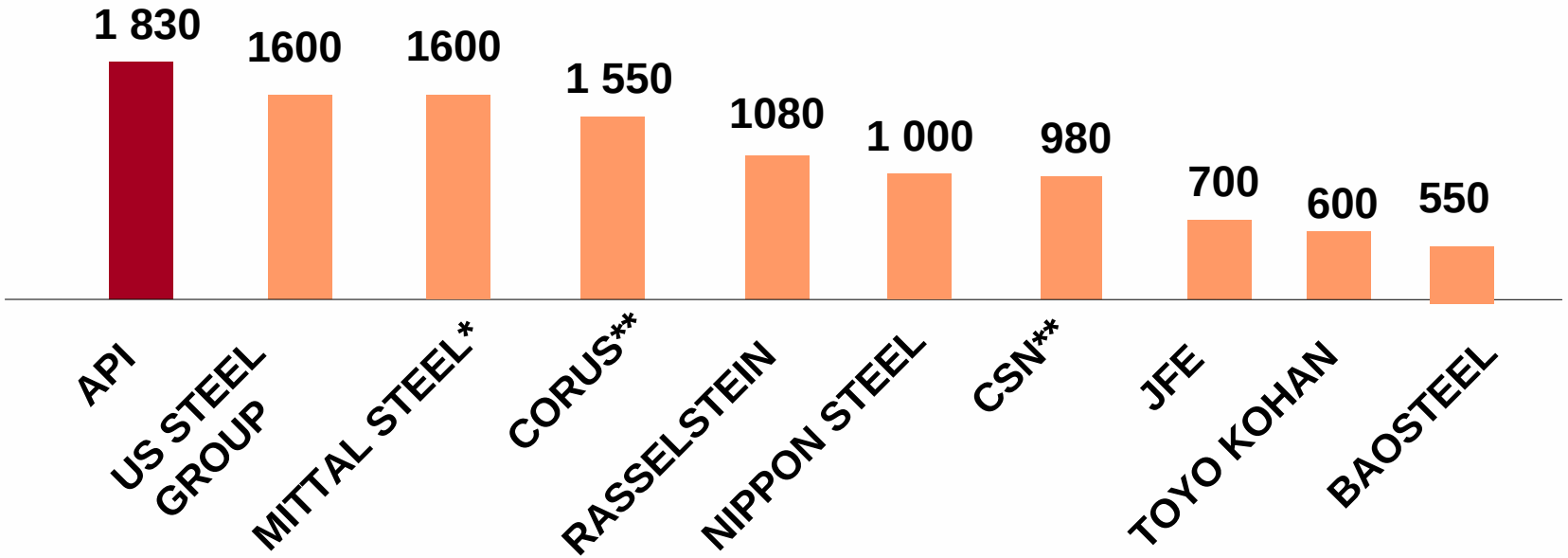
Tinplate is a small part of steel…



…but more concentrated than other Steel Applications

Top 10 (10/11 Mt) in 2004

60% of the world production (16 Mt)



** LNM = ISG + Iscor + Karmet*

*** Includes 50% Lusosider*

API: a market oriented strategy

Beverage Cans: 17%

3p can

Food Cans & Ends 48%

Closures: 9%

Aerosol: 8%

General Line 18%

Steel solutions for a better world

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Beverage can stock : a key market for Arcelor

STEELIUM
Beverage can stock

New STEELIUM's brand means :

Commitment to the whole market

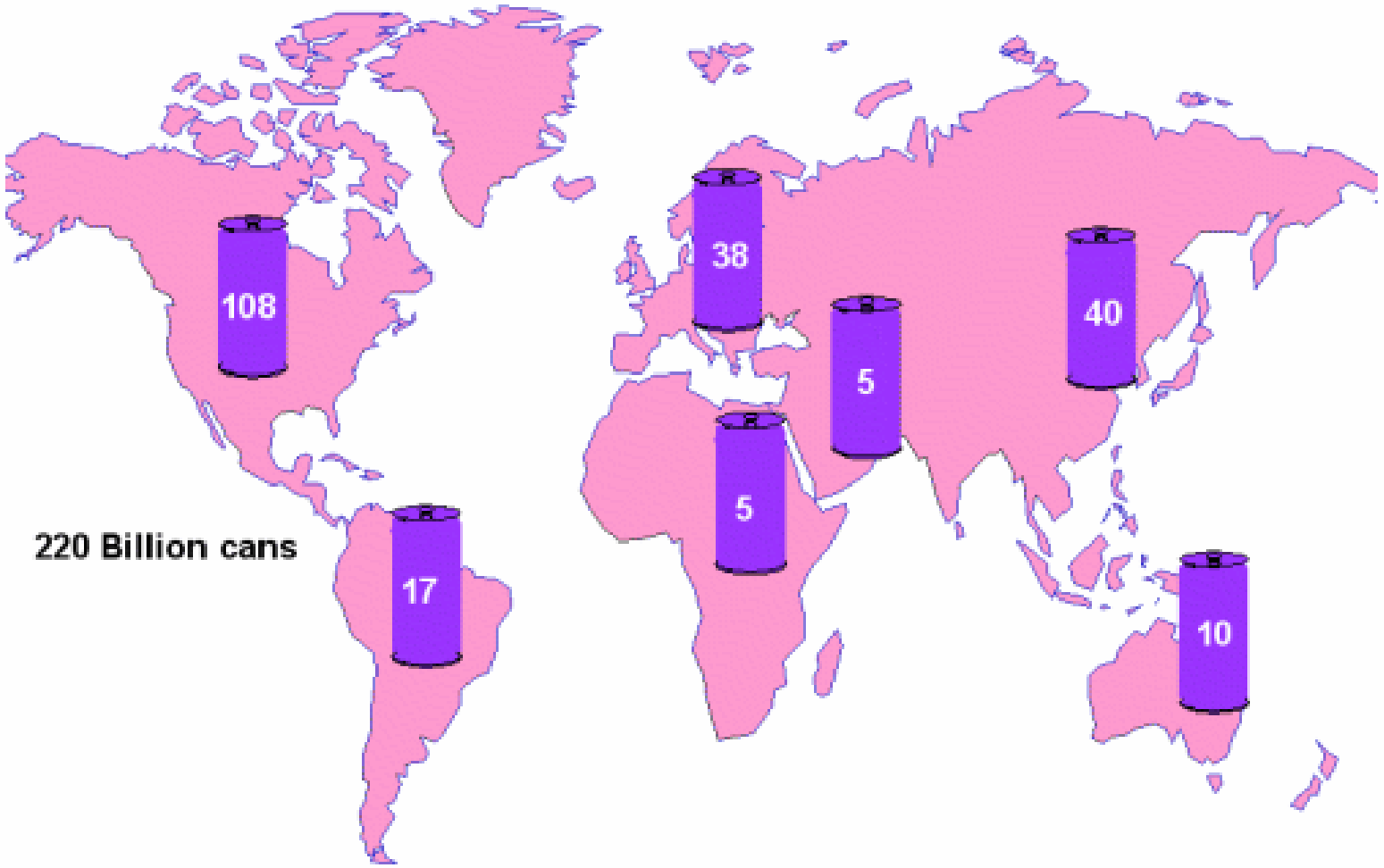
Development/Innovation (new products)

Supply chain

Technical assitance & expertise (CTS and Lab organizations...)

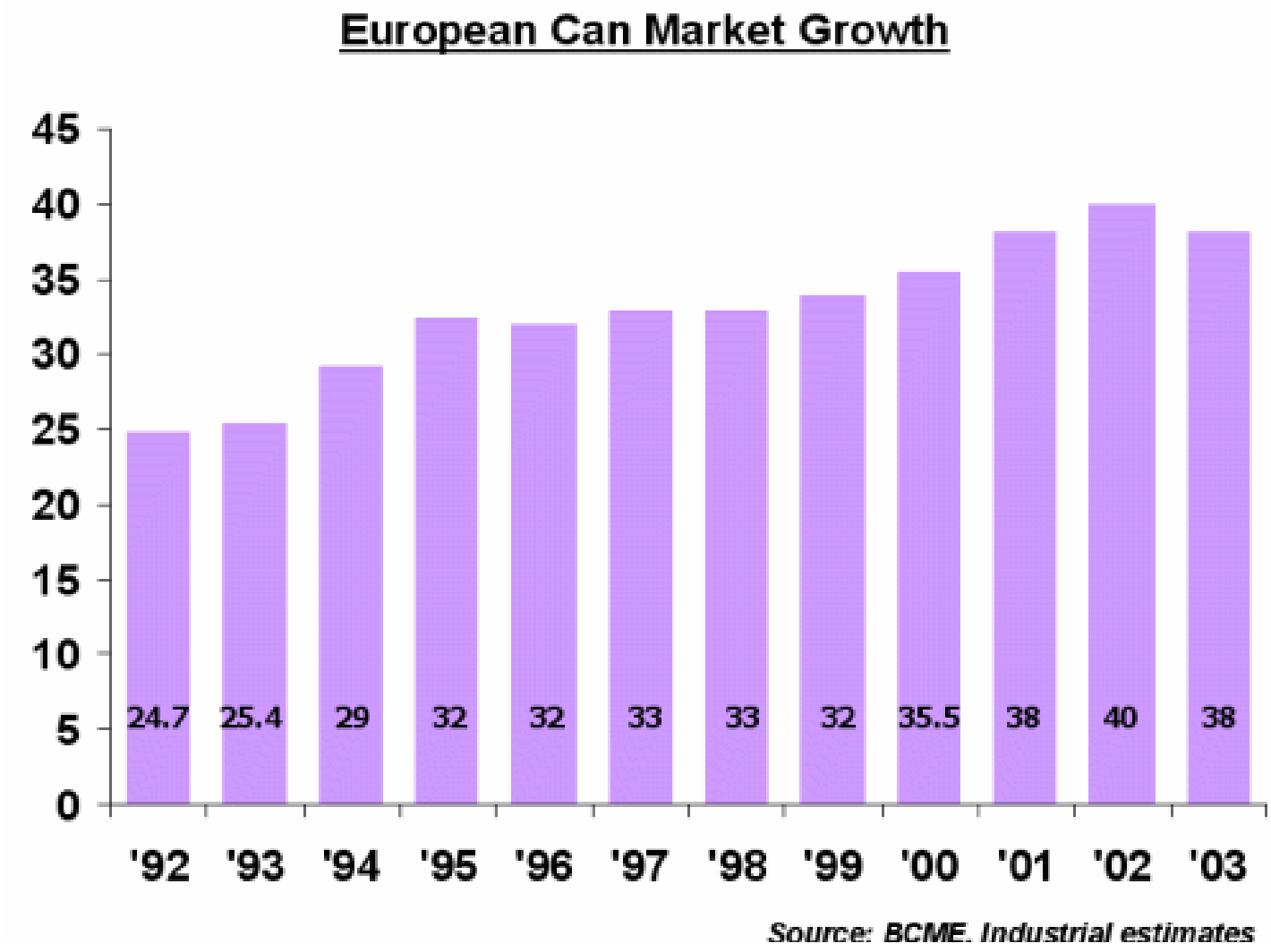
Partnerships

2003 World Beverage Can Market



Source: BCME

Bev cans consumption has grown by 54% in 10 years in Europe. MS is 60% Aluminum / 40% Steel



Arcelor: Your partner for steel beverage cans

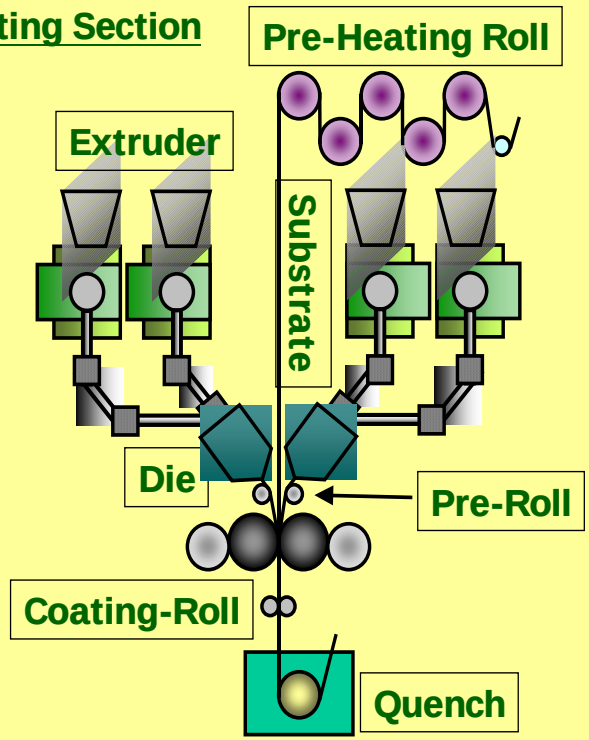
Innovation is the key for leadership in beverage can market : 2 breakthroughs in development work produced exciting perspectives

1. **Dual co-Extrusion Coating (DEC) on steel**
2. **« Dry » DWI process for can making**

- Value Added to the Chain
- Environmentally friendly
- Improved Overall Quality

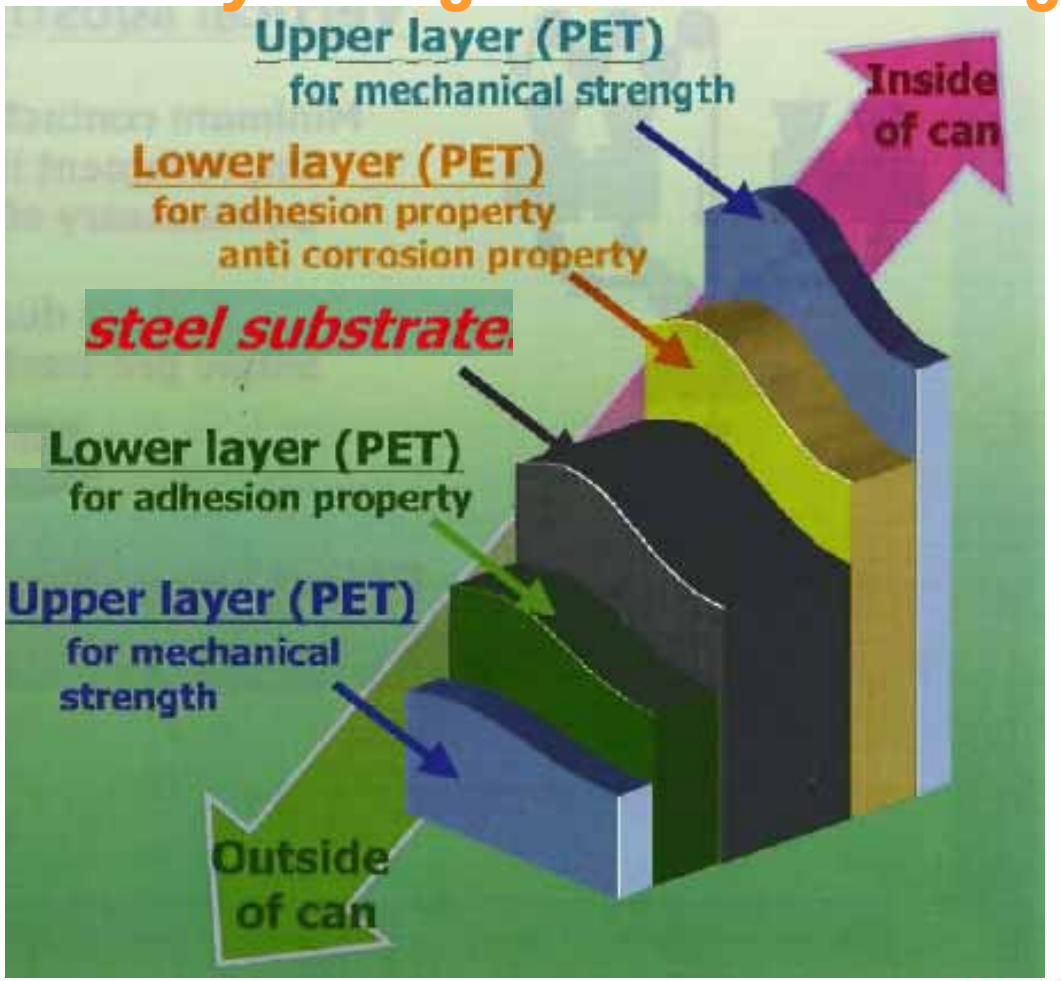
1. DEC Process : a Toyo Seikan/Toyo Kohan patent

Extrusion Coating Section



A compact & evolutive process, very competitive comparing with "laminated" technology :
- Starting point is PET resin instead of laminated film.
- Layers coating of both sides at same time.

2 Layers of PET on both sides of the steel strip, specifically designed for Beverage Cans



Internal Layer 20/30 µm

Substrate ECCS (160/200µm)

External Layer 10/20 µm

Arcelor Packaging International has purchased the TOYO-KOHAN DEC license :

- The extrusion line design
- The process and product controls
- The PET grades for DWI process

with the aim to supply the DWI Can market at short term

Polymer-coated Steel has already been used for beverage cans for a long time

- **TULC** (Toyo Ultimate Light Can) : draw-stretch ironing
  60 Bns Commercial Cans in Japan since 1991

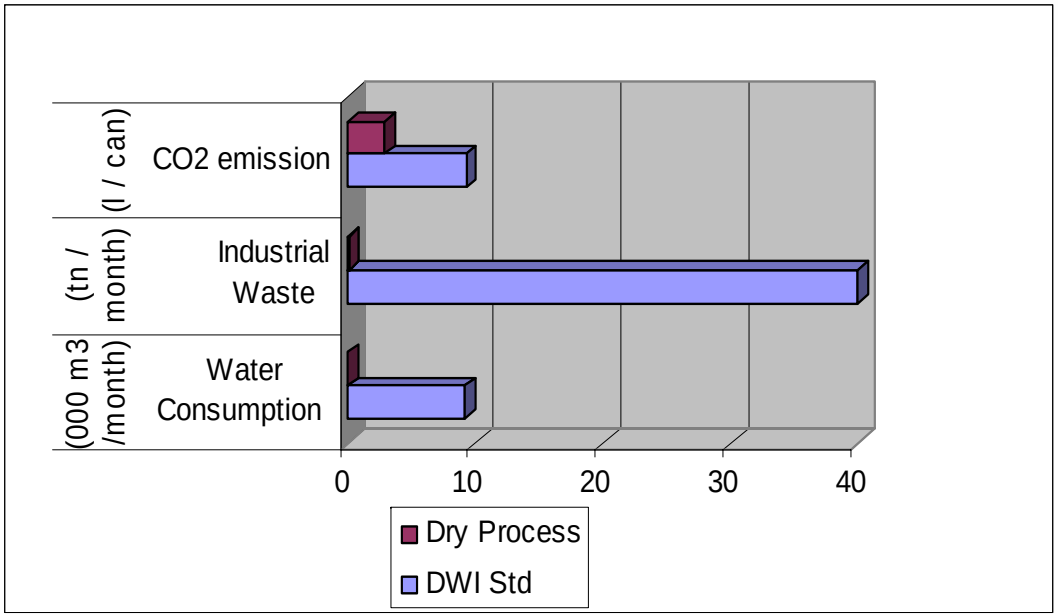
- **RBS** (Redicon British Steel) : draw-redraw

DWI "Dry" process for Precoated Steel with high Ironing Ratio = technical breakthrough (Toyo Seikan Development)

Dry DWI processing offers significant improvement for canmakers

ENVIRONMENT

- -No Varnishes
- -No Water Consumption
- -Less Energy (1/3rd)
- -Less CO2 emission



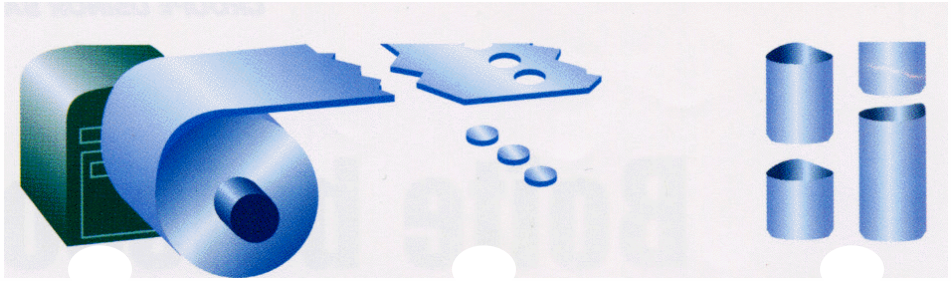
ECONOMICS

- -Significant reduction of investment for a new line : no Washer, no Inside Spray, no Bake Oven, no Incinerator, no Water Treatment
- -Significant production gains in operating costs (labour, utilities,etc...)

Dry process needs no further protection after forming

No VOC Emission

No Water Consumption



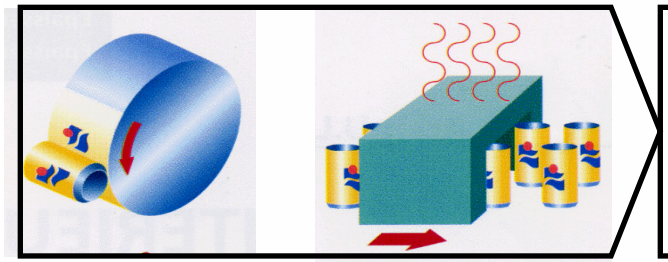
Cupping

Body making & trimming

Washing & drying

Base coating

Baking

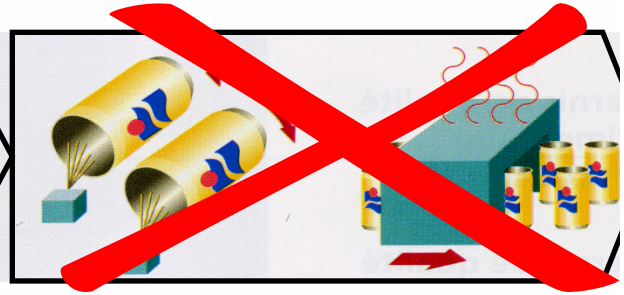


Printing

Baking

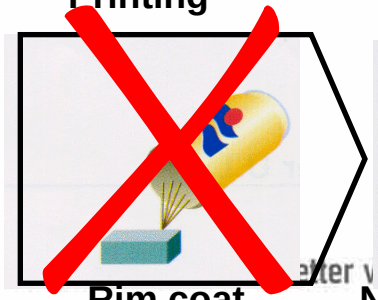
1st inside coating

Baking

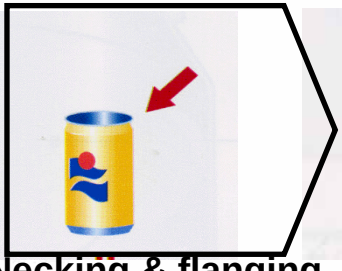


2nd inside coating

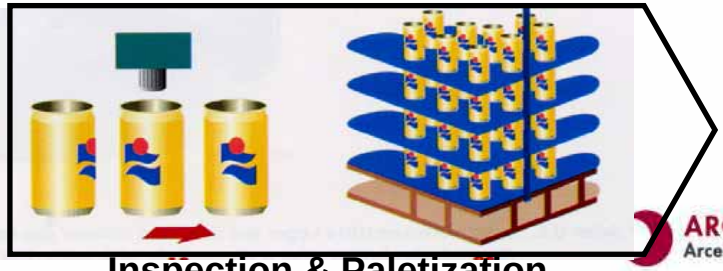
Baking



Rim coat



Necking & flanging



Inspection & Paletization

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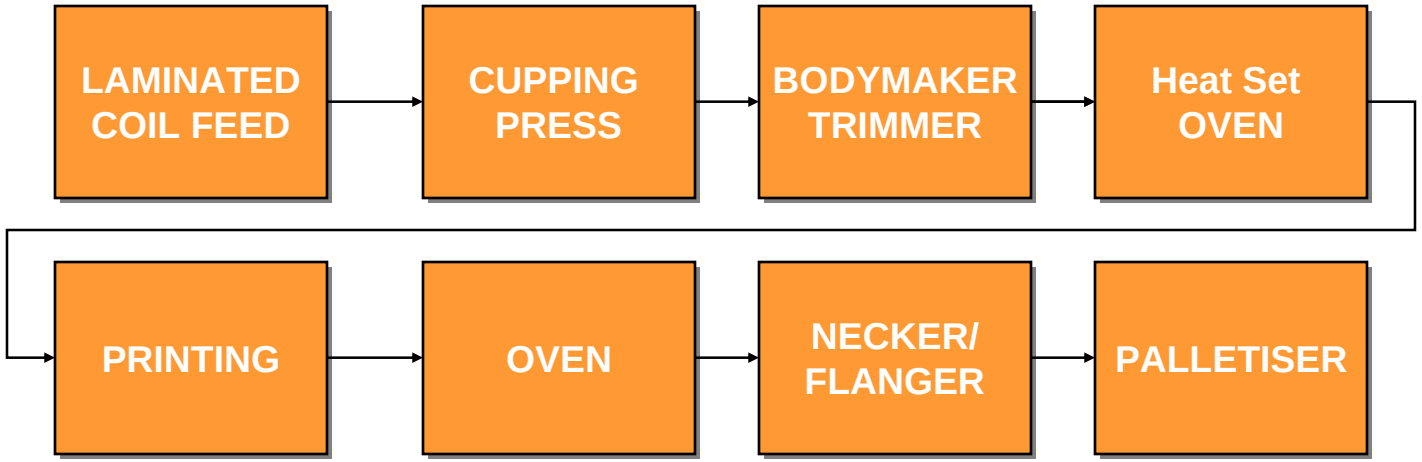
The new typical beverage can plant would be simplified



and the quality of the can is improved

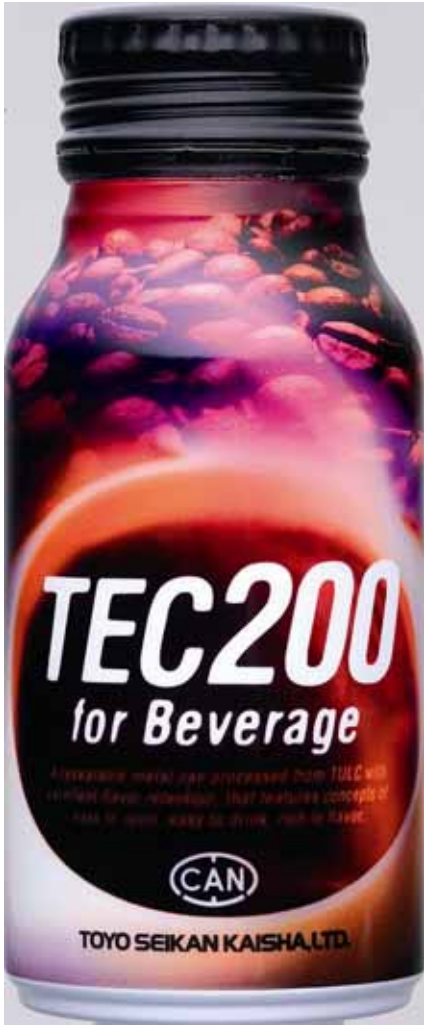
Protection : PET is more resistant than lacquer as a product barrier, as bottom protection, and wall denting. Moreover 100% of cans will be ERV tested and new dome shape will optimise strength.

Abrasion resistance : Better behaviour in conveyors

Appearance : New decoration possibilities (white, clear or pigmented Polymer)

Potential to pack new products : Water, Milk, Food, etc..

future perspectives are bright for new shapes



- **This technology breakthrough will produce the next major step forward in DWI Beverage and Food Can production.**

- **API's total commitment to this process signals to the Can making world :**
  Re-think all of your development plans so as not to miss out on the benefit's the DEC, (dry) DWI process will bring.