

Petcore's Director General address

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2003: Sustained Growth

The December issue of any self-respecting newsletter would spare some space for a reflection on activities of the past year. Not so with Petcore.

Sure, we can be proud of continuous business growth in Europe, sustained with an even higher growth of the number of post consumer PET containers that were recycled. How many? We don't have the exact numbers yet, but I guess it will be in the range of 12 billion bottles. Big numbers are always difficult to visualise, so let's stack them on top of each other and you will have pile from here to the moon.

So what's in store for 2003 ? A lot.

In spite of the economic downturn we're seeing in many European countries, we expect the PET beverage business to continue to grow. Much of this growth will come from 'new' business sectors such as fruit juices and dairy products, but existing outlets like soft drinks and mineral water will also continue to gain market share from competitive packaging materials. I'd like to call this 'natural growth': what else can you expect from a product that outperforms competition.

Another source for growth will be an increased penetration into the Central and Eastern European candidate countries. Increasingly, the citizens of these future members states will recognise and come to value the benefits offered by products packed in lightweight, versatile PET.

A third source for growth is product innovation. It is truly amazing to see how each month numerous ideas are transformed onto novel PET packaging solutions be it in resin, barrier, label, or cap technologies. Will it ever stop? Not in your lifetime. Product design is certainly one of the strengths of PET R&D. Almost like fashion, each year brings new demands, new solutions.

Europe is probably the most fertile breeding ground when it comes to advances in sorting and recycling technologies and we at Petcore are very excited to be right where it all happens. We see third generation bottle sorting equipment coming on stream with unbelievable precision and identification characteristics. This should serve one key objective: to strengthen the economic justification of PET recycling. In simple words: the collection, sorting and reclaim of post consumer PET will continue to become cheaper and more effective as time goes by.

That does not mean things happen without an effort. It is the commitment

of Petcore members to make sure their businesses are sustainable. Now we want others to join the fun too. Petcore membership has opened up to many other actors in the PET business chain.

What remains is our watchdog role when it comes to design parameters. It is still true that fillers introducing PET containers that cannot be recycled or cause difficulties in the PET reclaim processes (such as PVC sleeves) can do so unpunished. This cannot continue to be the case. We can either introduce a self-regulatory system, or become regulated.

This brings me to my final point when speaking about 2003 market expectations: the legislator. European and national lawmakers have a much larger role in defining the region's economic performance than what is justified by their duties. One of the best (or worst) examples last year was Germany and its ungainly introduction of a deposit scheme. I have nothing against deposits, but when uncertainties surrounding the introduction result in a temporary setback for all beverage businesses involved, this is not good news.

Depolymerisation through glycolysis : a worthwhile option for DKR

Germany is one of those countries where the safeguard of the environment is not even a topic for discussion any longer: preserving the natural world is everyone's business and every citizen is actively involved in the task.

It is not surprising then that it was Germany that created the system for the effective collection and recovery of post-consumer packaging that has now become the standard in many European countries: the "Green dot" system.

DKR, Deutsche Gesellschaft für Kunststoff-Recycling mbh, is the body, within the Green dot framework, devoted to the recovery of collected plastics packaging. Its goal is to guarantee the sound recovery of plastics packaging taking into account the principle of eco-efficiency. This principle requires that a recovery system be set into place only if the process is guaranteed to increase ecological benefits when compared to waste disposal.

DKR centres plastics recovery on three different means: mechanical recycling, feedstock recycling and energy recovery. It is the nature of the recovered packaging that destines it to a specific recovery method.

In order to ensure the quality of the secondary raw material issuing out of mechanical recycling, the input material for the process (i.e. collected packaging) must be as pure as possible.

When it comes to PET, this entails that it be thoroughly separated from other plastics, and according to its colour. Indeed, the textile industry is still the main outlet for recovered PET. However, it only desires a raw material that is easy to dye, therefore they have a strong preference for flakes or pellets originating from clear, transparent containers.

Feedstock recycling and energy recovery are suitable for mixed plastics streams, that is for those collected packaging that for a series of reasons cannot be separated according to their type.

In order to have the best possible eco-efficiency, DKR favours competition between the various recovery options. This is the reason why it has now decided to investigate depolymerisation as an additional means of recovery for those PET packaging that challenge current mechanical recycling techniques.

DKR is investigating three different techniques: depolymerisation through hydrolysis, methanolysis and glycolysis. DKR assessed each one of these techniques based on:

- End products produced,
- The potential market for such products and
- The economic feasibility of the process.

DKR reached the following conclusions:

Depolymerisation through hydrolysis leads to the formation of terephthalic acid (TPA) and ethylene glycol (EG). A market exists for these end products, however the process requires high production costs because it is quite sophisticated. What is more, next to TPA and EG large quantities of salt are formed. These need to be disposed of entailing further costs.

Similarly, the methanolysis route generates products that do have a potential market: dimethyl terephthalate (DMT) and ethylene glycol (EG). Technically more advanced than hydrolysis, methanolysis requires even higher investment and operating costs.

The glycolysis technique spawns Bis-(2-hydroxyethyl)terephthalate (BHET) or polyester polyols (APP). The polyester polyols formed during glycolysis are primarily used for the production of foamed insulating materials (rigid PUR and PIR foam) but can also be the starting point for the production of flexible foams, adhesives, coatings or casting resins, products for which a market exists.

Given the low technical expenditure needed for the process and the relatively high energy content of the end products subsequently requiring less energy for their processing, glycolysis is economically lesser than the other two processes reviewed. Glycolysis is therefore, according to DKR, the best option for PET depolymerisation from the economic, technical and ecological viewpoint.

Nevertheless, DKR sustains that the success of the project greatly depends on the market conditions for polyester polyols. For the time being, large quantities of cheap phthalic acid polyesters can be found on the market. Although these cannot always be used as a substitute for terephthalic acid polyols, DKR says that if the trend continues in the long term, it may not be economically sound to develop such a recycling route.

Depolymerisation Recycling : Comparison of the Various Processes : Advantages and Disadvantages

	-	0	+
State of Development		◆	▲ □ ■
- Laboratory			
0 Production plant			
+ Pilot plant			
Technical/Investment Expenditure	◆ ▲		□ ■
- High			
+ Low			
Operating Costs	◆ ▲		□ ■
- High			
+ Low			
Ecology		◆ ▲	□ ■
- Less ecological			
+ Ecologically favourable			
Operating Complexity	◆ ▲		□ ■
- Complex			
+ Simple			
Energy Consumption	◆ ▲	□	■
- Low			
+ High			
Potential Markets	□	▲ ■	◆
- Low			
+ Medium/Unclear			
+ High			
Product quality		■	◆ ▲ □
- Low			
0 Medium			
+ Good			

◆ Hydrolysis
▲ Methanolysis
□ Glycolysis (Oligomers/BHET)
■ Glycolysis (Polyols)

Plastics collection systems throughout Europe : The case of Austria

In our last issue of Petcore News, we launched a new series on how plastics packaging waste collection and recovery is organised throughout the EU Member States. Second in this series, we review the organisation of one of the youngest members of the EU.

In 1993, when accession negotiations started for Austria, Finland and Sweden, Austria transposed into national law EU Directive 94/62/EC on packaging and packaging waste. It is the Austrian Packaging Ordinance, established on the basis of the Austrian Waste Management Act, that contains the provisions on producer responsibility: all producers, distributors and importers putting packaging or packed goods on the Austrian market are fully responsible for the take-back and recovery of their discarded packaging.

In order to abide by the Packaging Ordinance, companies can either recuperate their packaging by organising and setting into place their own collection system, or they can delegate their responsibility on to an established organisation.

The recognised Austrian post-consumer waste collection organisation, Altstoff Recycling Austria AG (ARA), is based on the "green dot" system conceived by the German recovery association Duales System Deutschland (DSD). This system allows the discharge of the take-back obligation through payment of a license fee. The fee paid to the licensor, calculated on the basis of the volume, by weight, of the packaging material put on the market, covers the full costs linked to the recovery of packaging waste (collection, sorting, transport...). Affiliates of the "green dot" are granted the right to use the graphical mark on their packaging to show that they contribute to the system. However, the use of the mark is by no means compulsory.

Set aside from the umbrella organisation ARA that concludes license agreements and collects fees for all packaging materials, another two companies are involved in the Austrian plastics collection and recovery process: Verpackungsverwertungsgesellschaft (ARGEV) and Österreichischer Kunststoffkreislauf AG (ÖKK).

In collaboration with private disposal companies and municipalities, ARGEV organises the specific collection and sorting of plastics, aluminium, steel, tin, wood and composite packaging.

As far as ÖKK is concerned, it is not only accountable for the transport of the collected and sorted plastics packaging and the organisation of the actual recycling and recovery of this fraction, but it is also responsible for evaluating new recycling technologies, for providing advice to manufacturers on how to create a plastics packaging that is 100% recyclable and for informing consumers about collection and recycling of plastics.

Unlike what happens for many other European collection systems, the Austrian packaging recovery organisation encompasses both post-consumer and commercial and industrial waste. The collection scheme is based on both a "bring" and a "door-to-door" collection.

"Bring" collection requires that recyclables be brought to specific collection centres and be disposed of according to their nature. The various fractions collected can be recognised thanks to a colour code allocated to the range of bins at the



public's disposal. Yellow is the colour dedicated to plastics, composite material, ceramics, textiles and wood.

"Door-to-door" collection merely requests citizens to select their plastic packaging wastes and dispose of them in special yellow bags in the comfort of their own home. Yellow bags are then collected like ordinary refuse.

17% of the total Austrian "yellow" collection is recovered through the "bring" system, whereas a good 83% is gathered thanks to the "door-to-door" one.

In order to find out whether the public was satisfied by their packaging recovery system, ARA conducted, in 2001, a survey amongst Austrian citizens. The survey revealed that 91% of Austrians do collect packaging wastes separately from their ordinary garbage. Furthermore, the people questioned reported that separate collection is part of their everyday life and requires no extra effort on their part.



Austria	2001
Annual amount of packaging produced	1.2 million T
Recovered through ARA System	644,534 T
Plastics and composite materials recovered	114,125 T
License partners	12,652

Composition of sorted fractions (2001)	%
Source OKK	
LDPE Films (coloured)	38,4
LDPE Films (clear)	14,6
PET Bottles	18
HDPE/PP containers	14,4
LDPE Films	6,7
PP/PS Packaging	8,4
EPS foams	2,3

ARA license agreements significantly increased throughout the years. When it started out 1994, licensees amounted to 8,353. They grew to 11,479 in 1998 to reach 12,652 in 2001.

ARA's total revenues in 2001 amounted to 162.7 million Euro, a 22.2 million Euro rebate from the previous year.

Austria is not only one of the EU newest members; it is also one of the smaller by surface. If you are interested in the collection and recovery system of packaging waste in the tiniest country of the Union, make sure to get hold of our next issue of Petcore News, where we will review the case of Luxemburg and its Valorlux system.

Take-back and Deposits for one-way beverage packaging in Germany: An update

After many ups and downs, to-ings and fro-ings the various German courts, the notorious deposit on disposable containers has finally been set into place. As of January 1, 2003 German consumers must return their one-way beverage packaging to the point of sale.

A deposit of 25 and 50 cents (for containers with a capacity of less or more than 1.5 litres respectively) is charged on disposable packaging and is reimbursed once the container is returned.

The German population however, is reported to be very confused. In order for the deposit to be paid back, beverage packaging must be returned to the very outlet where it was bought alongside the stores' receipt proving the origin. This is said to be a temporary situation as later this year (October) customers will be able to return their one-way packaging to whatever shop they please.

In the meantime, if large stores with stocking capacity do not report major problems, smaller retailers complain about the cumbersome measure.

Some people have also started complaining about odour giving off around collection spots.

Yet another legal action from those opposing the deposit system is expected from the federal German administrative court on January 16, 2003 but it seems unlikely that the system slowly being set into place will see a further reversal of fortune.

Material recovery and recycling events

13.01.-15.01.03 International Electronics Recycling Congress; Basel/Switzerland;
Organised by: ICM;
Contact: Tel. 0041/56/664-7250,
Fax 0041/56/664-7252,
E-Mail: info@icm.ch.

30.01.-02.02.03 Fair Heleco 2003;
Athens/Greece;
Organised by: Technical Chamber of Greece;
Contact: Tel. 0030/210/7257693,
Fax 0030/210/7257532,
E-Mail: info@erasmus.gr.

02.02.-05.02.03 Fair Environment & Energy;
Abu Dhabi/United Arab Emirates;
Organised by: General Exhibitions Corporation (GEC)/KölnMesse;
Contact: Tel. 0049/221/8210,
Fax 0049/211/8212092,
E-Mail: info@kmi.koelnmesse.de.

24.02.-26.02.03 Conference Take it Back!
2003; Alexandria/USA;
Organised by: Raymond Communications;
Contact: Tel. 001/301/3454237,
Fax 001/301/3454768,
E-Mail: michele@raymond.com.

26.02.-27.02.03 Global Plastics Environmental Conference 2003; Detroit/USA;
Organised by: Society of Plastics Engineers;
Contact: Tel. 001/203/7405454,
Fax 001/203/7758490;
E-Mail: jshaker@4spe.org.

05.03.-08.03.03 Tau Expo; Milan/Italy;
Organised by: Promexpo;
Contact: Tel. 0039/02/40922401,
Fax 0039/02/40922450,
E-Mail: promo.tauexpo@promexpo.it.

23.03.-26.03.03 The 18th International Conference on Solid Waste Technology & Management; Philadelphia/USA;
Organised by: Widener University;
Contact: Tel. 001/6104994042,
Fax 001/610/4994059,
E-Mail: solid.waste@widener.edu.