



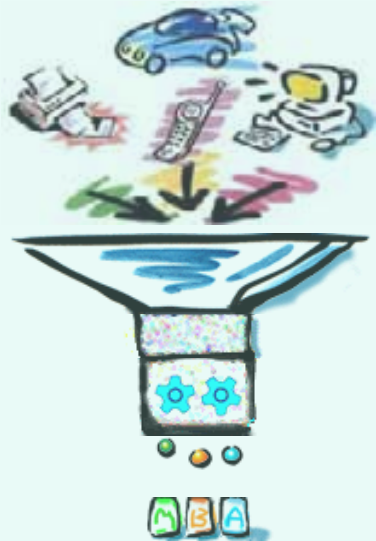
R'09 
Twin World Congress

World Resources Forum 2009

EMPA E-Waste Study Tour 2009

Welcome at our Austrian Facility

Arthur Schwesig
Compliance Manager
Chris Slijkhuis
Director Sourcing



What is necessary to produce 1 ton of plastics?



approx. 900 liter crude oil



approx. 2 tons e-waste



approx. 14.000 kWh



approx. 950 kWh



OR

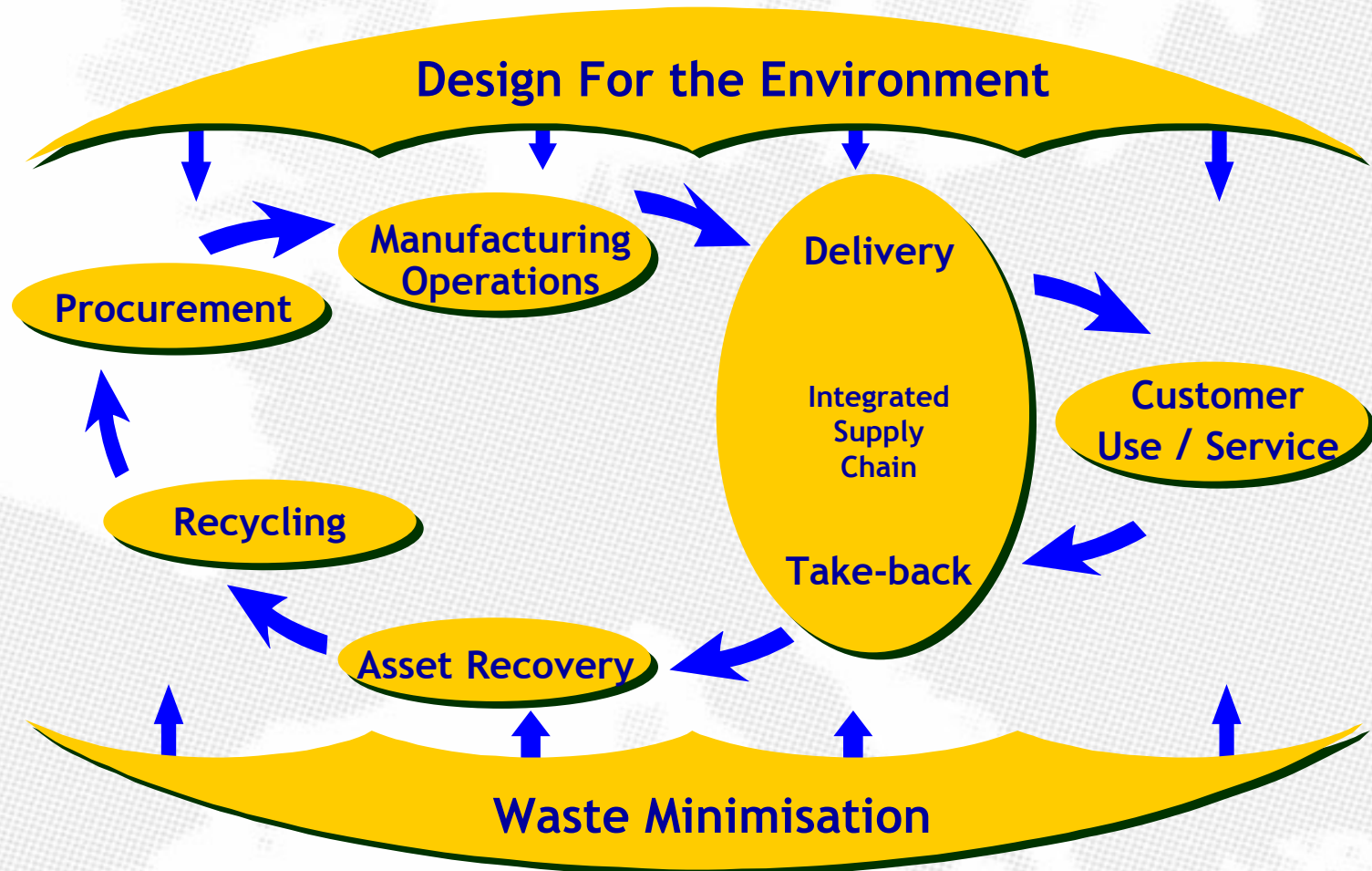


<10% of the water consumption

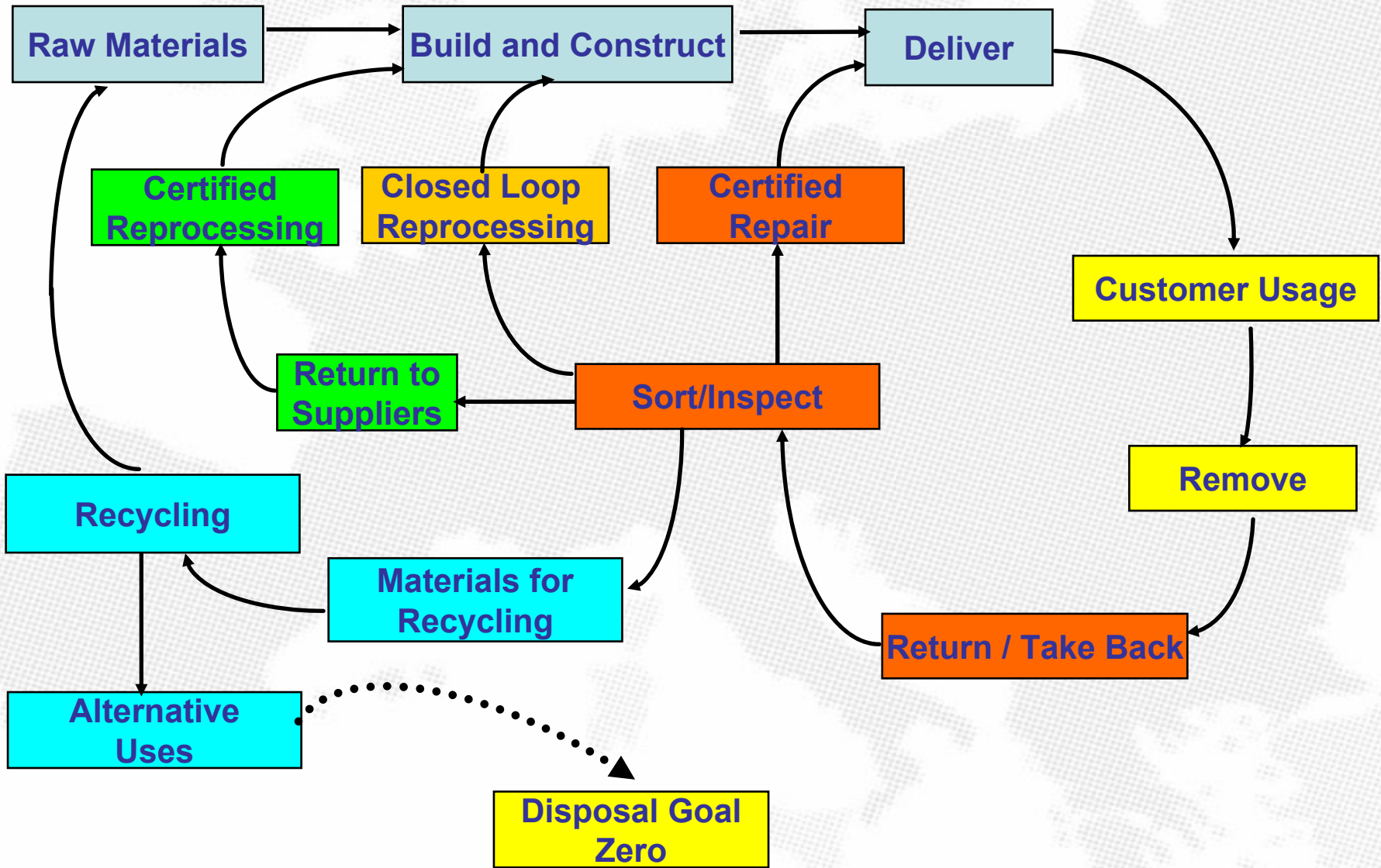
<10% of the energy consumption

2-3 kg reduction of CO2 emissions per kg of recycled plastic

Teaming up to get from Supply Chain to Supply Cycle.....



From Supply Chain to Supply Cycle



Global End-of-Life Material Return Growing



Millions of tons of durable goods are shredded every year to liberate and recover the ferrous and nonferrous metals

E-Waste Plastics



Options for Plastics-Rich Streams after Recycling

▶ Landfilling:

banned in some countries, costs increasing, questions about pollution, lose important raw material

▶ Incineration:

(in many forms) costly and becoming more-so, questions about air pollution, capacity issues, lose important raw material

▶ Sell to brokers or directly to third world recyclers:

might not be legal in some countries depending on material make-up, rules always changing, some brokers come and go, does recycler adhere to acceptable environmental standards? What happens to byproducts?

▶ Recycling in line with the European Standards:

large customers require a more reliable and dependable solution, customers for these plastics can push feedstock to e-cycle suppliers, but need large volumes and ideally global presence to do this successfully.

Plastics Rich Material Quantity Growing



Tens of millions of tons of plastic-rich shredder residue that is mostly incinerated or land-filled

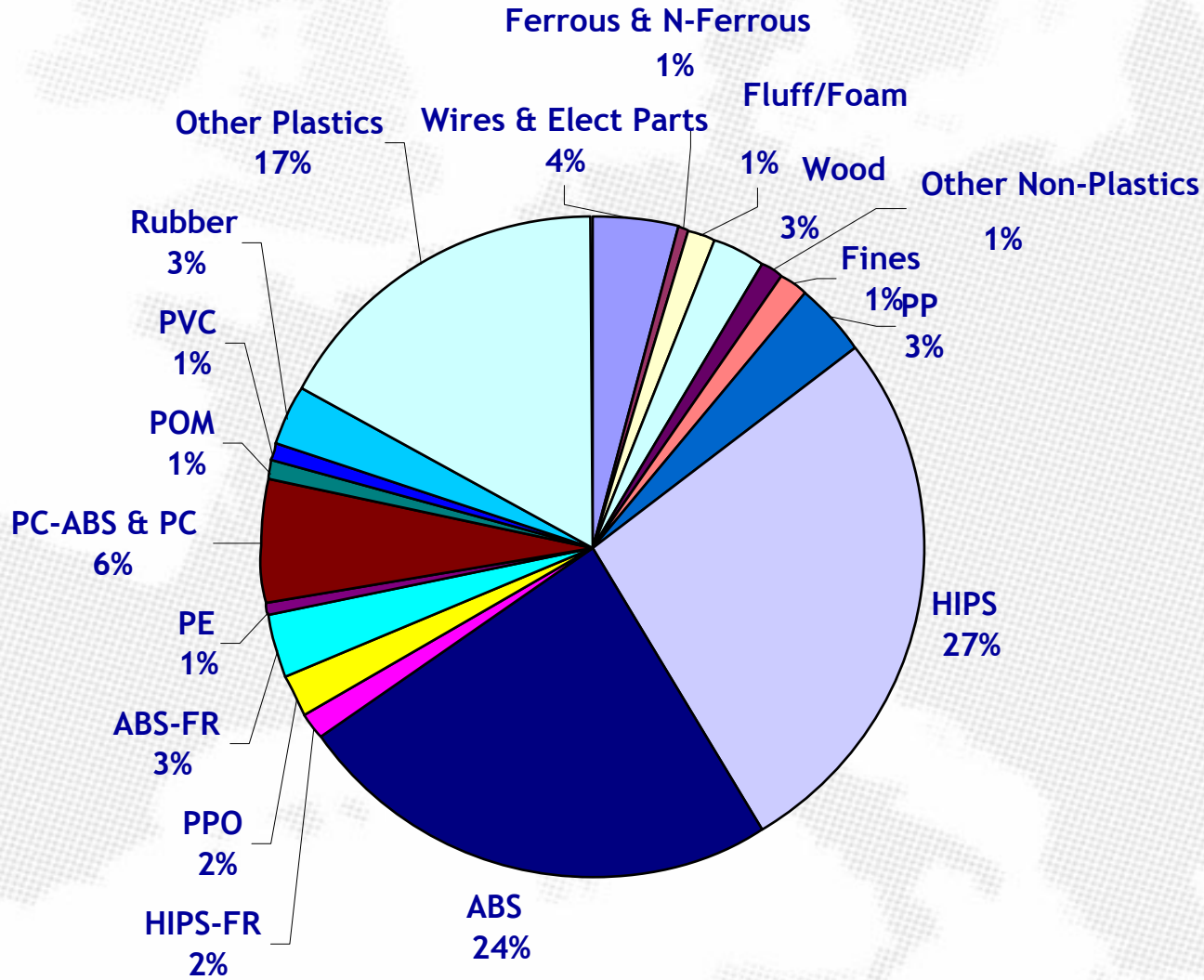
The Raw Materials



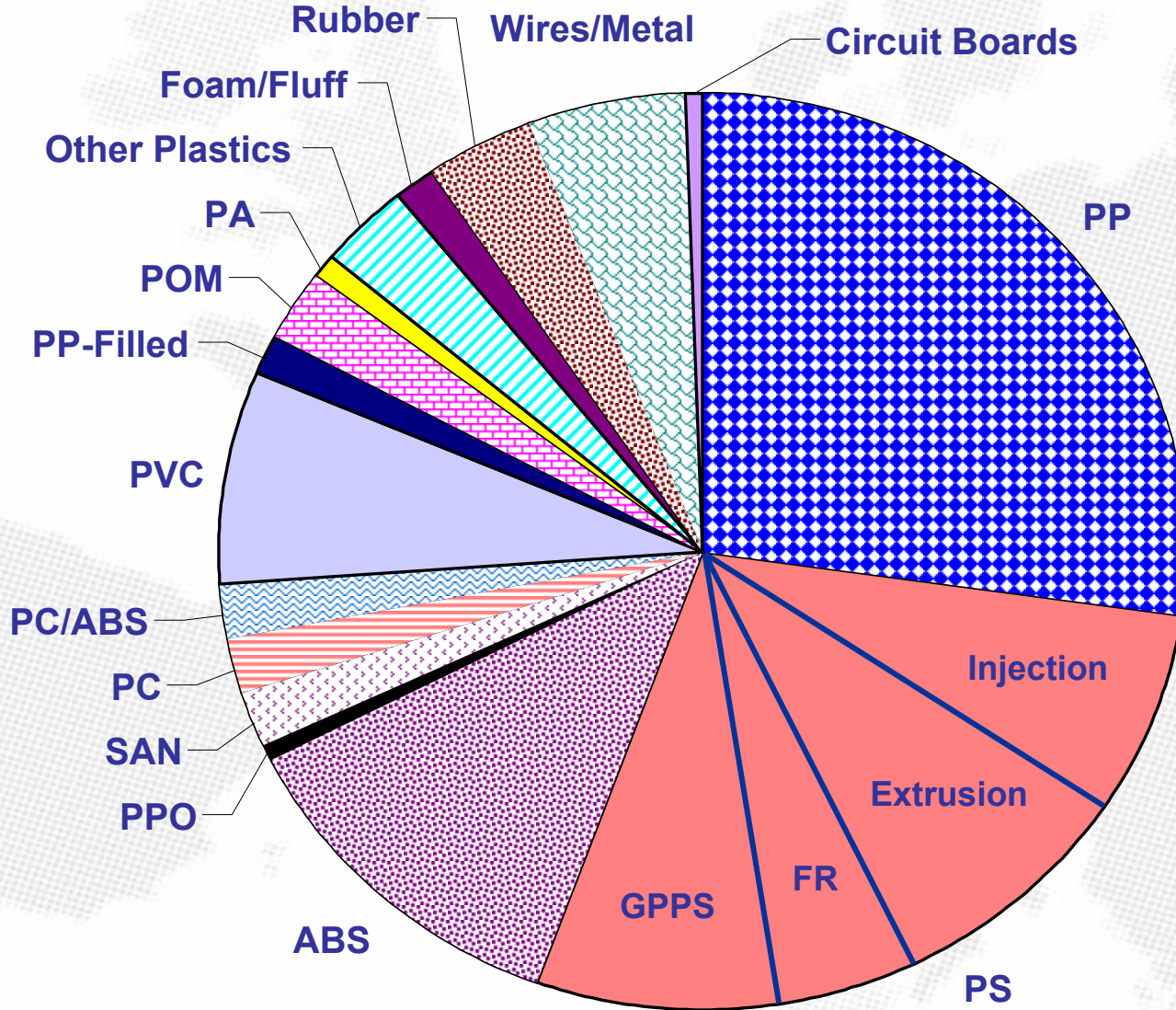
The Raw Materials



The avg. composition of the Sourcing Material EU



The avg. composition of the Sourcing Material Asia



May we invite you to one of our plants?

A joint-venture between

MBA Polymers and
Müller-Gutenbrunn

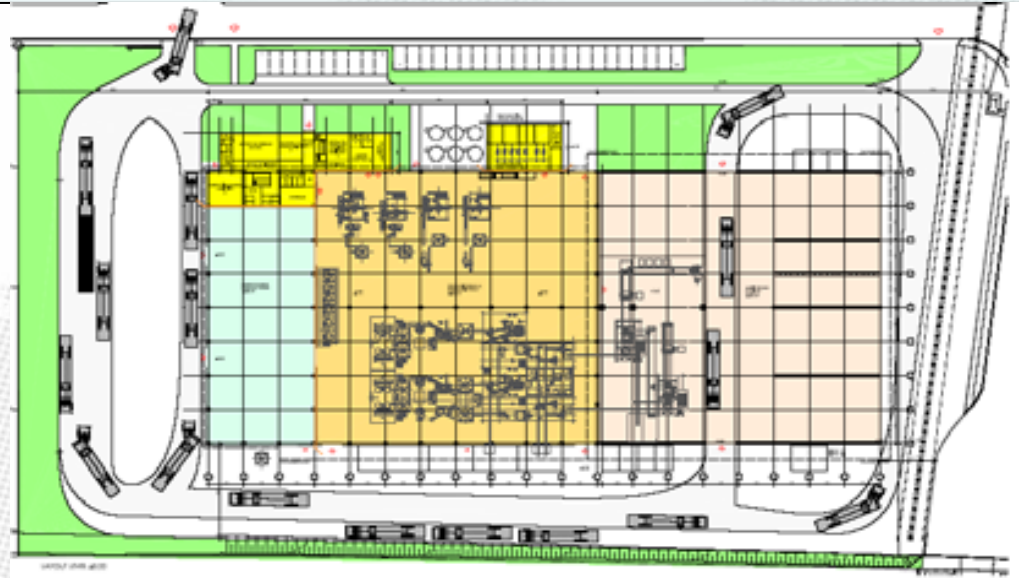
Location

Kematen an der Ybbs

- ▶ Danube vicinity
- ▶ Direct Rail-Connection (2007)
- ▶ Near A1 Motorway
- ▶ Easy access Western/
Eastern Europe

Capacity

40 000 Tonnes per annum



Goods-In, Analysis & Pre-processing



Goods-In, Analysis & Pre-processing

▶ Sourcing & Goods-In

- Material Handling
- Assaying
- Material Analysis

▶ Pre-Processing

- Taking out remaining metals
- Cleaning material of minerals (glass, stones, dust)
- Eliminating organic fractions such as wood and rubber

▶ Size reduction to a standard particle size

▶ Conveying plastic material into high tech separations



High Tech Separations & Extrusion/Compounding



High Tech Separations & Extrusion/Compounding

- ▶ **Cleaning plastics**
 - Closed circuit water treatment
- ▶ **High-Tech Separations**
 - Obtaining ABS and PS
 - In three grades
 - Injection Moulding
 - Extrusion
 - General Purpose
- ▶ **High quality extrusion and compounding**
 - RoHS compliant products

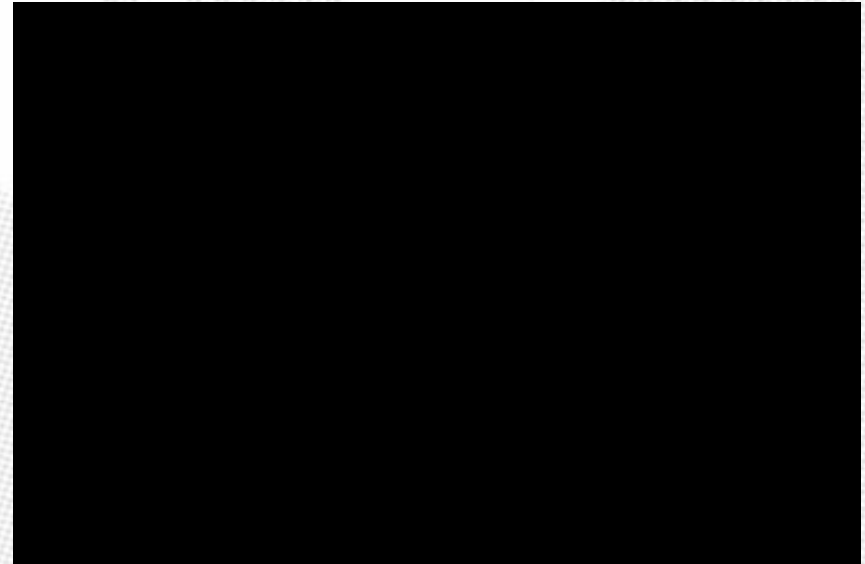


Laboratory for detailed process control



Laboratory services 24/24 hours

- ▶ **Incoming Material Analysis**
 - Yield & contaminations
- ▶ **Process Control**
 - Numerous checkpoints
 - In-time feed-back cycles
 - Purity control final products
- ▶ **Final products Quality Control**
 - Each big bag is quality controlled
 - MFI, Izod and Tensile Strength



Why a High-Tech Global Footprint.....

Electronics OEM's are Global and they demand:

- Global Supply of Plastics
- Virgin-like quality of the tech plastics they use
- Large, dependable and consistent volumes
- Consistent technical specifications
- A global answer to their Waste Plastics
- Reliable service levels

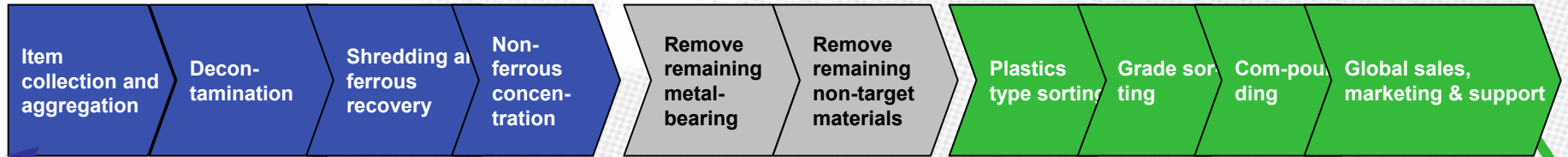
to become designed in.....



Creating a Global Footprint



MBA Polymers never in competition with metal recyclers



E-Waste Recyclers

MBA Polymers

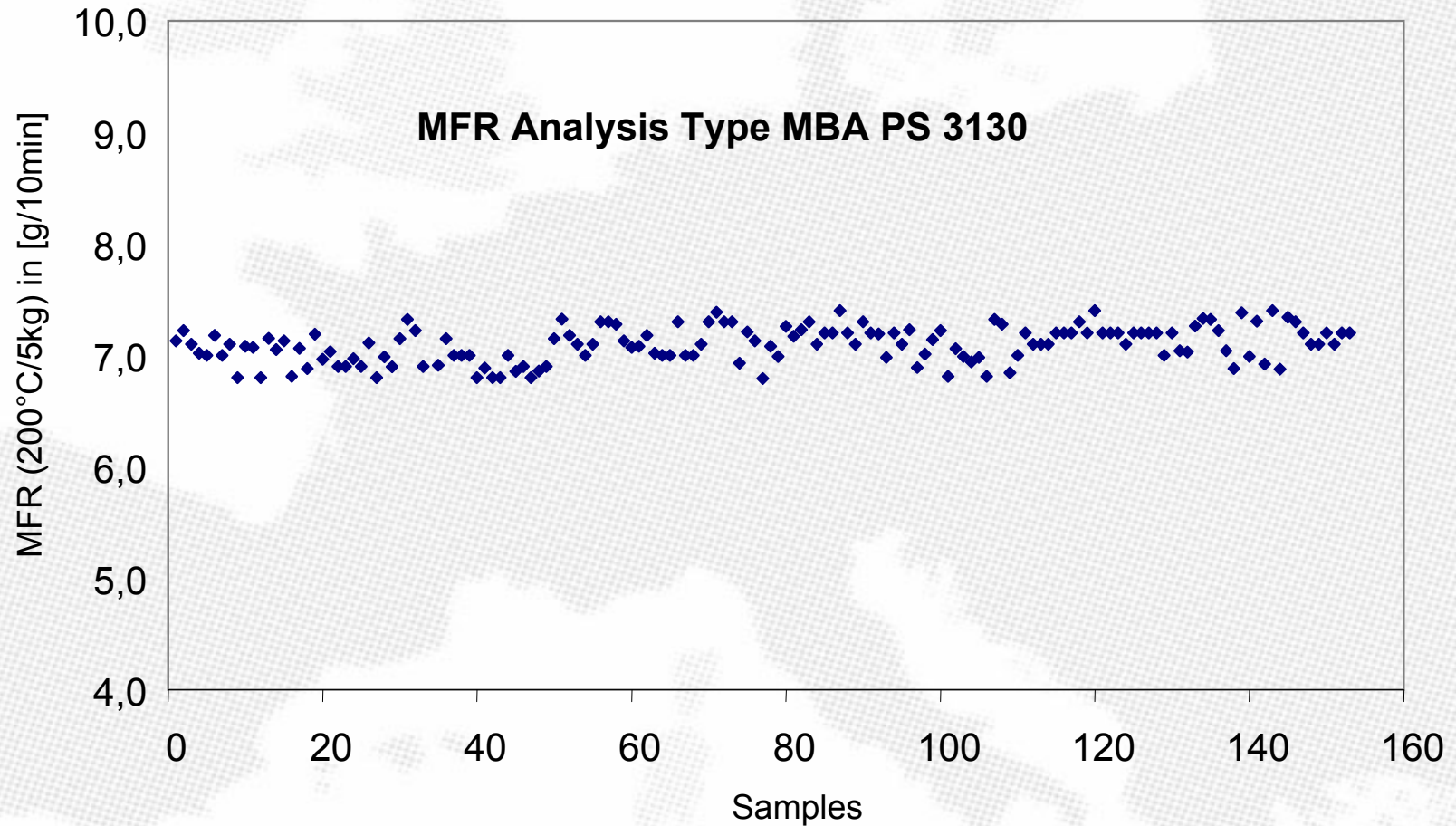


.....and create Teamwork to Close the Loop for Plastics

Products - ABS, PS, PP as pellets & compounds



Stable Properties with MBA Polymers' Resins



RoHS Compliant Plastics

Products made with MBA Polymers' Resins



Products made with MBA Polymers' Resins



Products made with MBA Polymers' Resins



MBA Polymers' Resin Advantages

- ▶ **High quality resin with stable properties**
 - ISO 9001:2000
 - RoHS certification
- ▶ **Custom properties for custom applications**
- ▶ **Green “Cleantech” image and responsibility**
- ▶ **Saving large amounts of energy**
- ▶ **Low CO2 Emissions**

Resins with Environmental Awareness

The World Economic Forum recognized MBA Polymers



Not that we needed it, but 2005 reminded us again that fossil fuels are finite and that poverty and terrorism seem to be inexhaustible. The World Economic Forum Technology Pioneers this year include entrepreneurs who are working to alleviate pain at the pump as well as human suffering. They produce energy-sparing new approaches to solar power, nanolighting and even a handheld haz-mat detector. Others are doing amazing work in creating synthesized disease killers, minting silver bullets for pathogens or using stem cells to cure heart disease. On the security front, there are new analyzers, sensors and antivirus hardware that could make our cities and computer networks safer. **Finally, someone invented a way to clean up the e-waste left over when all that technology goes out of date in the next minute and a half.**

MBA Polymers, Inc.
Michael Biddle

**E-Waste Meets
Its Re-Maker**

By LAURA A. LOCKE/SAN FRANCISCO

Mike Biddle hates waste. As a kid, he was forever switching off lights at home to save energy. Years later, while working at Dow Chemical, he suggested that he focus on recycled plastics instead of high-tech composites. "We didn't hire a Ph.D. engineer to



Technology Pioneer 2006

The criteria for becoming this WEF recognition as Tech Pioneer are:

- ▶ Innovation
- ▶ Potential Impact
- ▶ Proof of Concept
- ▶ Growth and Sustainability
- ▶ Leadership
- ▶ Status

Teamwork to Close the Loop for Plastics

