



VELOTHENE
High Technology Polymer Additive

Revelation of a Revolution



Product

VELOTHENE is ..

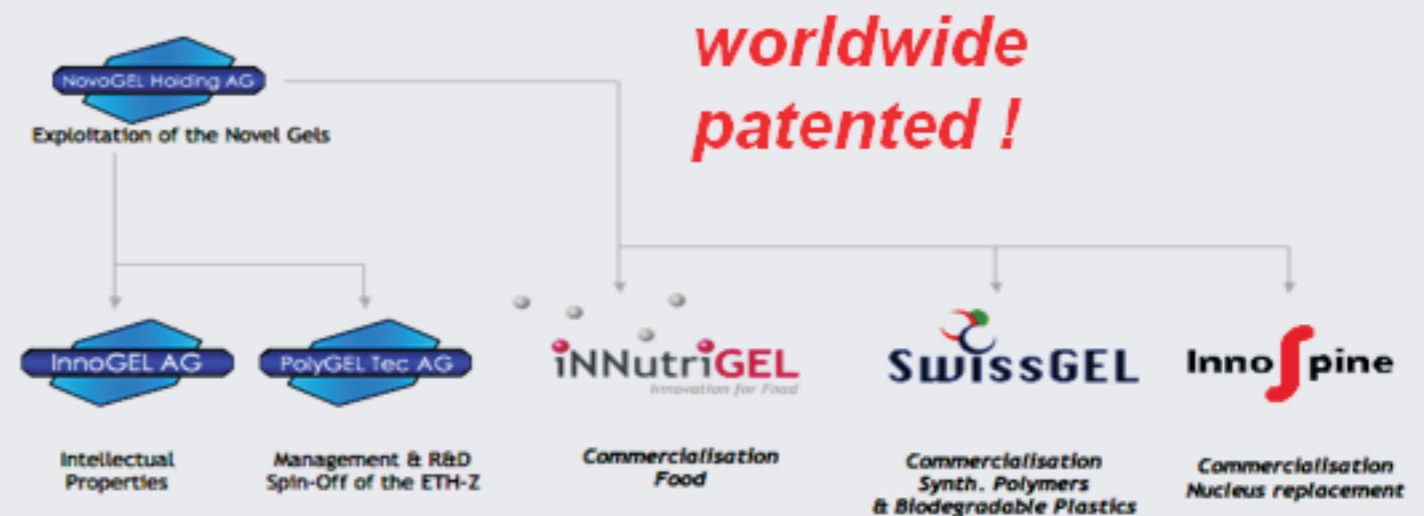
- an additive for Polyolefines
 - physically modified
 - no change in chemical structure



- a GEL

- a three-dimensional molecular chain, whose molecular structure has been generated by physically joining of selective macro molecules.

- an Innovation





Product

VELOTHENE is ..

- **worldwide exclusive license to:**



Plaasteka FZE, Jebel Ali, Dubai, UAE

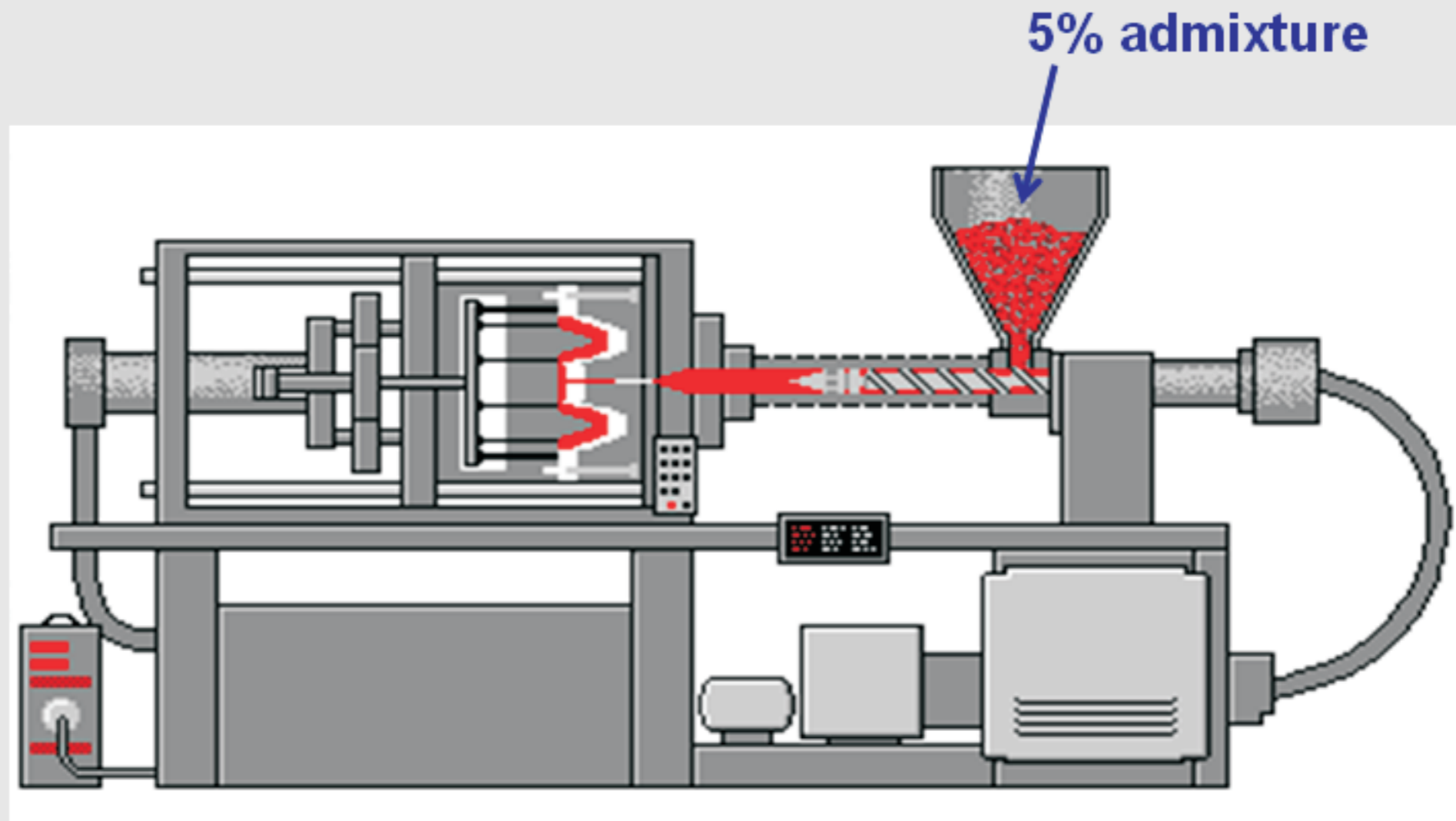
- **Abstract of the patent:**

The invention relates to polymer mixtures that are used in injection molding and make it possible to reduce cycle times and thus increase economic efficiency as a result of significantly improved flow ability and a greater crystallization rate. In addition, the mechanical properties of the injection-molded parts are improved.



Effect

VELOTHENE .. improves flowability



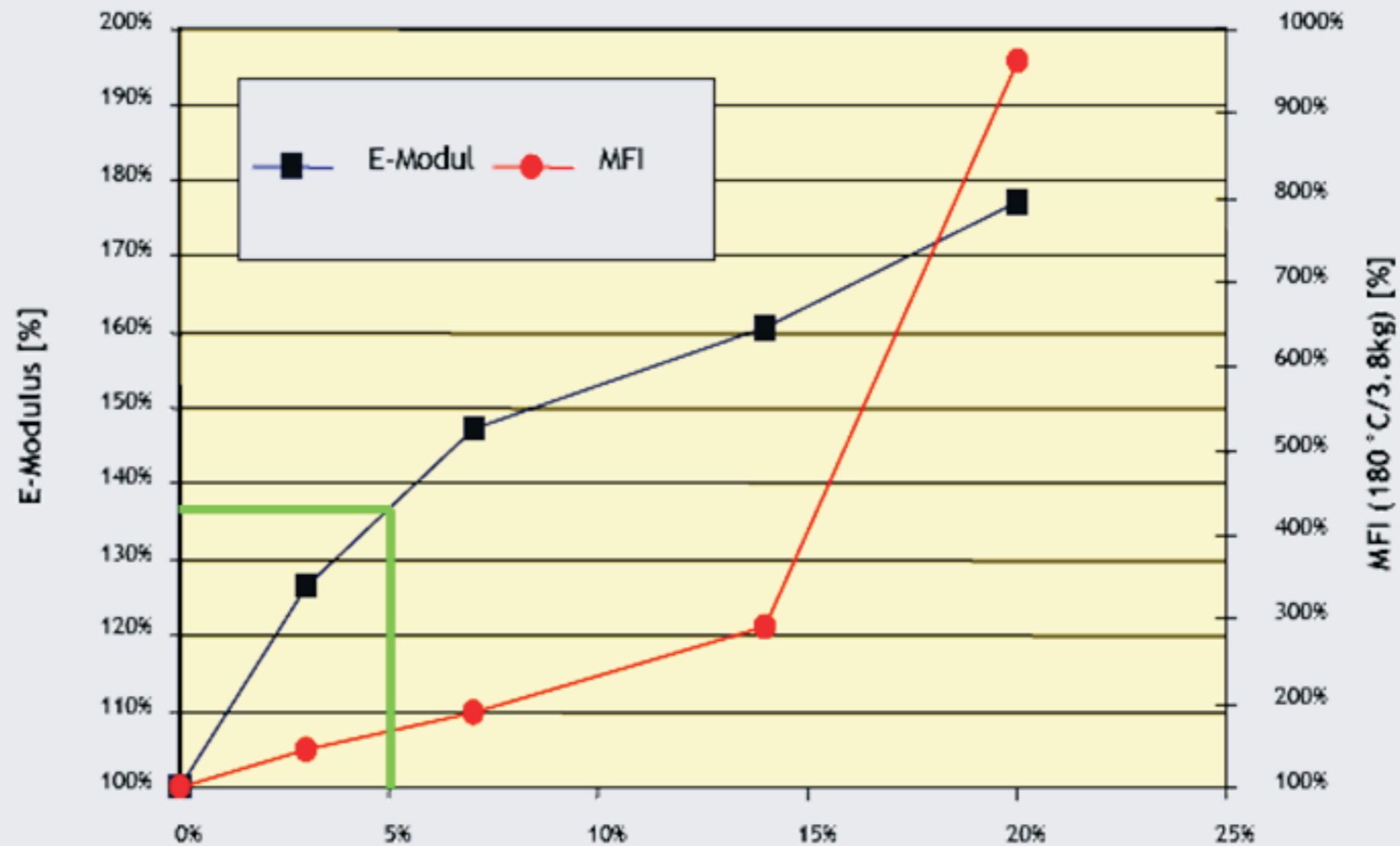
→ lower melt temperature → shorter cooling time → reduced cycle time
means savings of production and energy costs



Effect

VELOTHENE leads at 5% admixture to ..

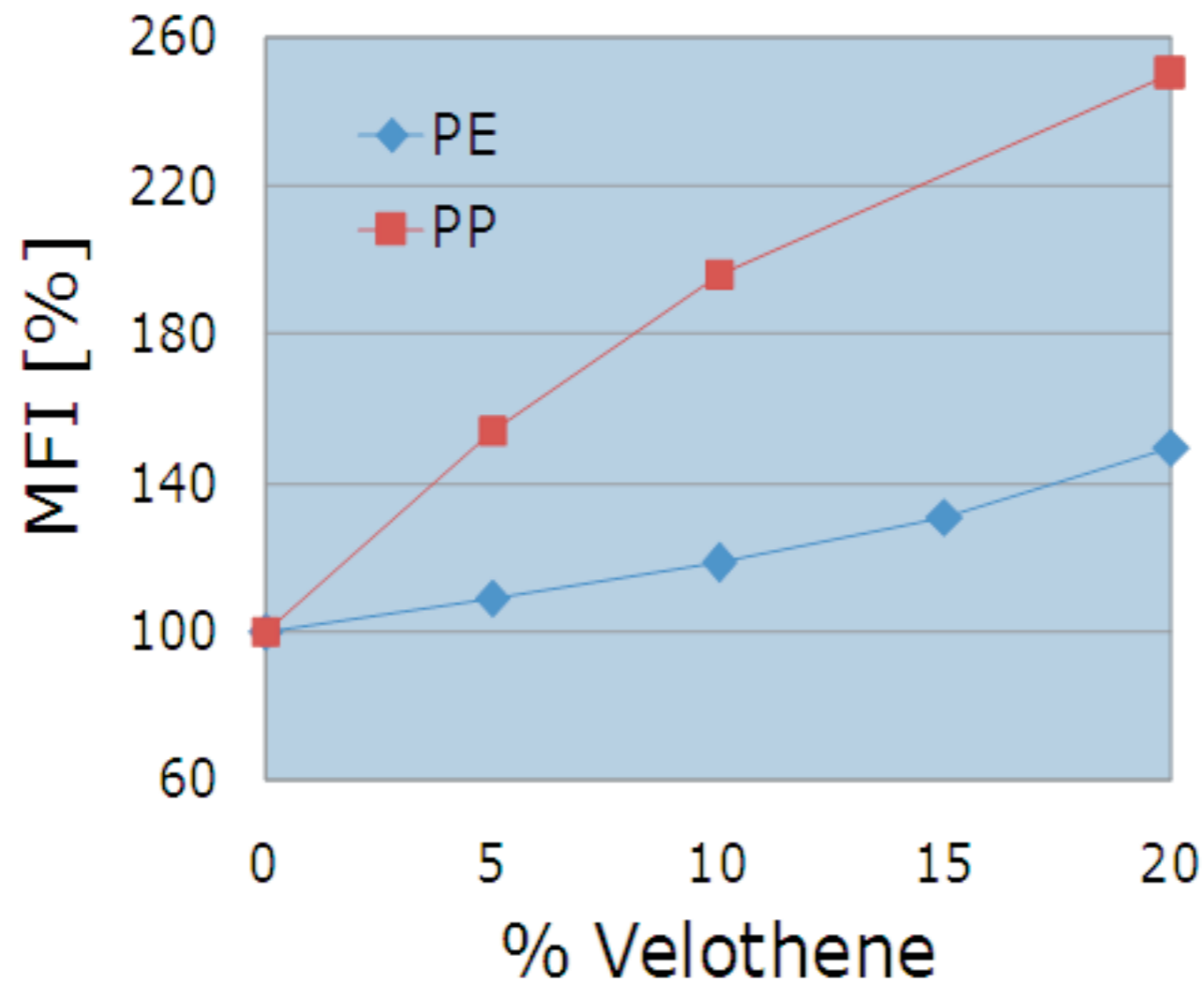
- an increase of the E-Module and MFI





Effect

VELOTHENE tested ..



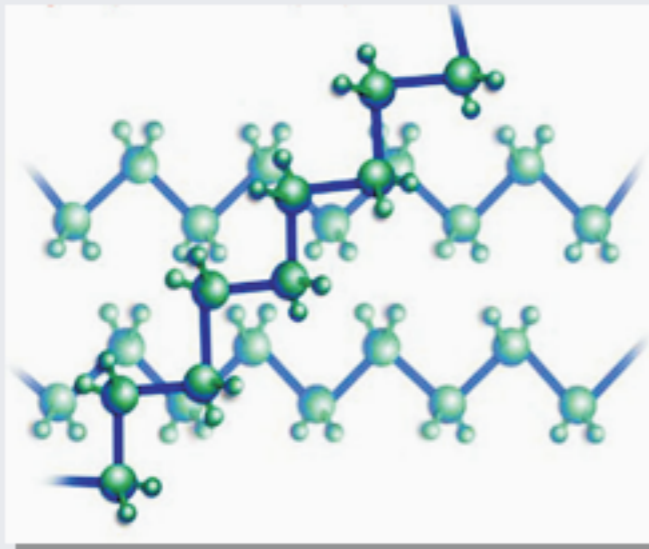
PE: 190°C; 2.16kg
PP: 230°C; 2.16kg



Effect

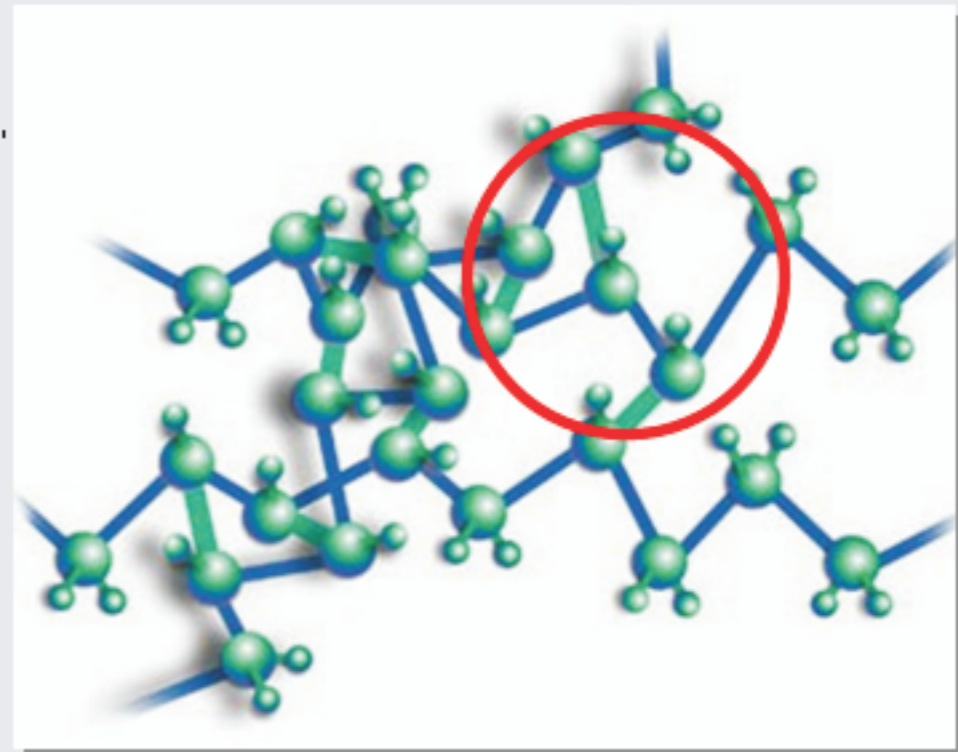
VELOTHENE .. physics versus chemistry

Representation of a polyolefin molecular chain

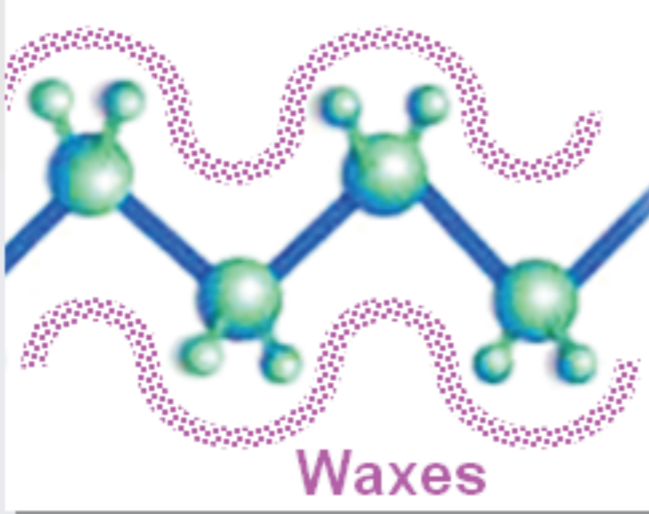


A molecule of e.g. polyethylene is a long chain of carbon atoms, with two hydrogen atoms attached to each carbon.

VELOTHENE crosslinks produce a three-dimensional structure in the material



Chemical flowability enhancer



Waxes

.. lie on top of the molecule

.. diffuse to the surface of the molded part

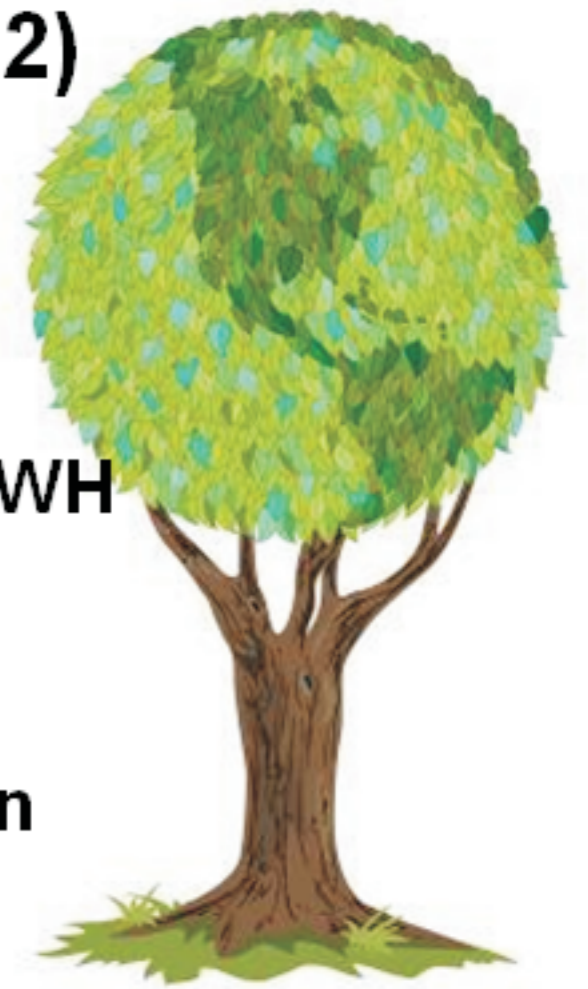
- more difficult to separate, greater toughness and wear resistance -> **more solidity in shape**
- no diffusion of flowability enhancer in contrast to waxes -> **clean molded parts**



Effect on Environment

VELOTHENE .. Reduces carbon footprint

- Saves 53Ton of Carbon di oxide(CO₂) per one million standard crates
 - 430gms of CO₂ generated per KWH Electricity consumption
 - Electricity consumption per Crate 1.5 KWH
 - 1549 MWH are consumed for producing 1Mn crates produce 666 Ton of CO₂
 - With usage of **VELOTHENE** 8% saving in Electricity can be achieved

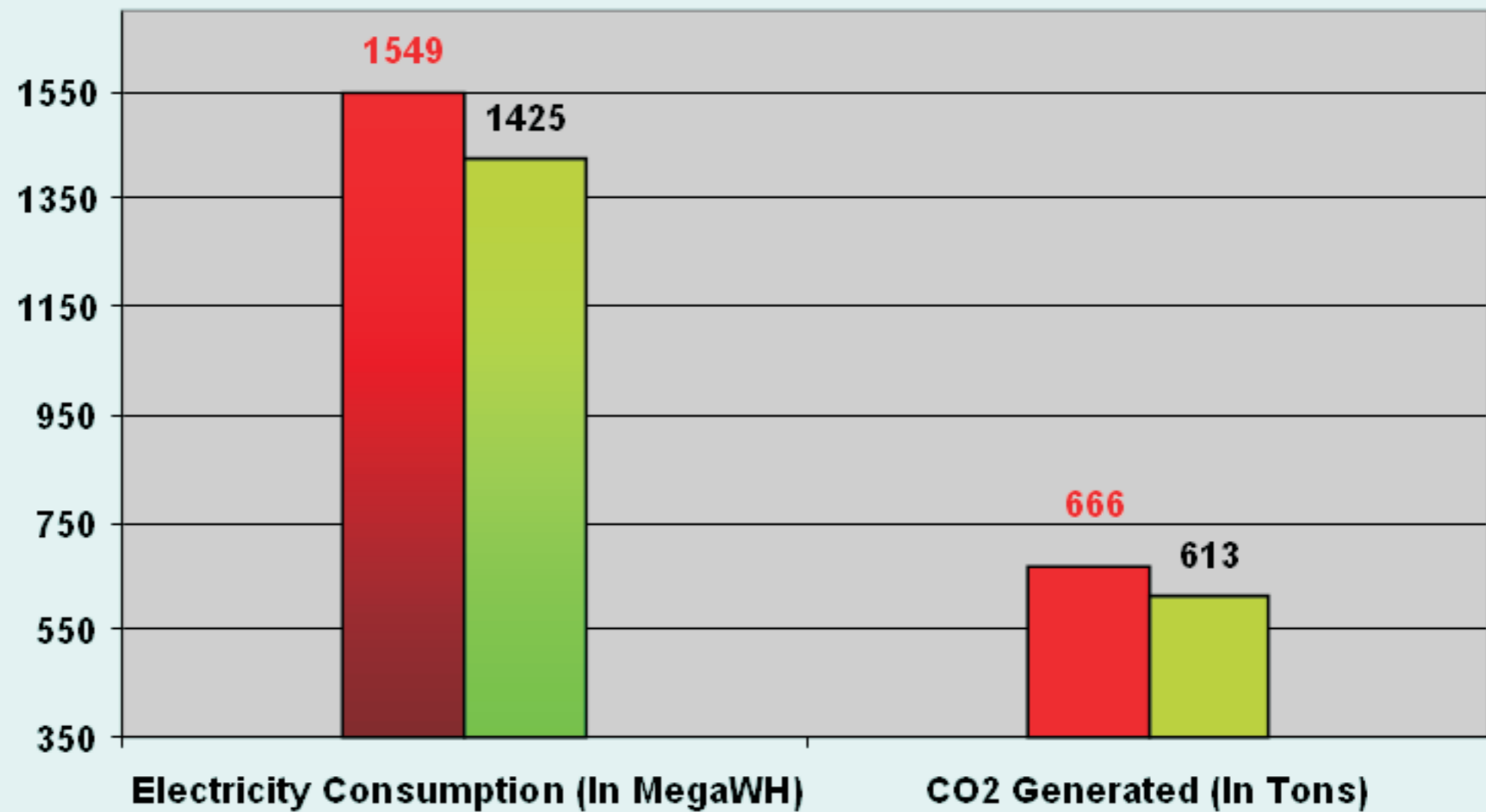


**For company buying 25 Mn bottle crates per Year
.....Can Save 1325 Tons of CO₂ per Year**



Effect

Electricity Consumption & Carbon Dioxide Generation per one Million bottle Crates



■ Without Velothene ■ With Velothene

Raw Material - HDPE + 5% Velothene



Mode of action

VELOTHENE achieves at 5% admixture ..

- **the processing temperature reduces by 40° C - 50° C lower in comparison to common HDPE or PP.**
 - without varying melt peaks
 - less electricity consumption (8% saving)
- **major reduction of cooling time & Cycle time**
 - thanks to crystallization on a higher temperature level
 - Shorter mould filling time
- **More recycled material can be processed without affecting the quality**
- **Improve mechanical properties**



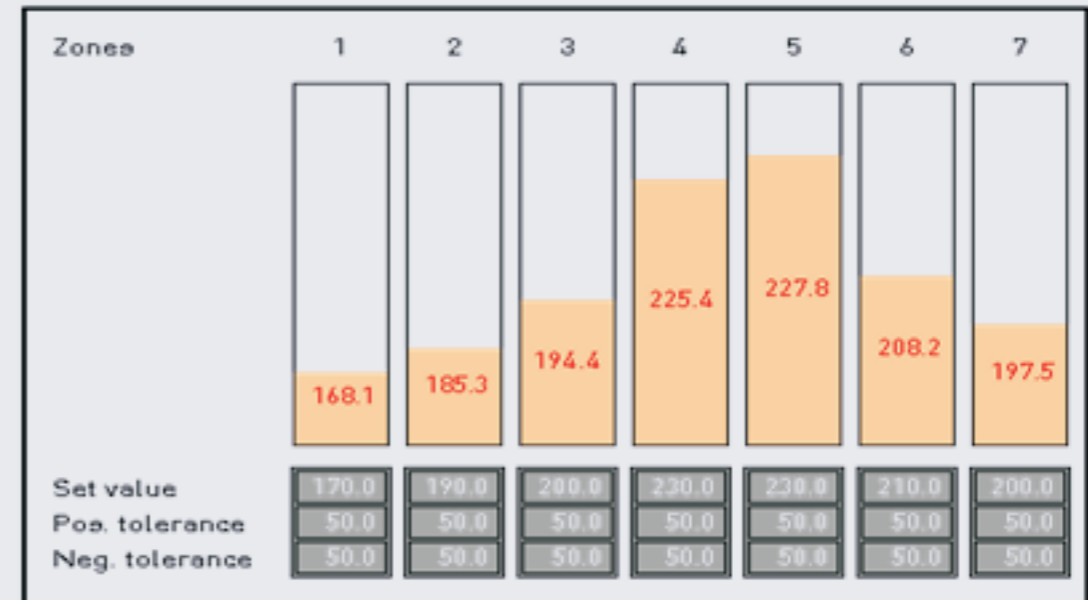
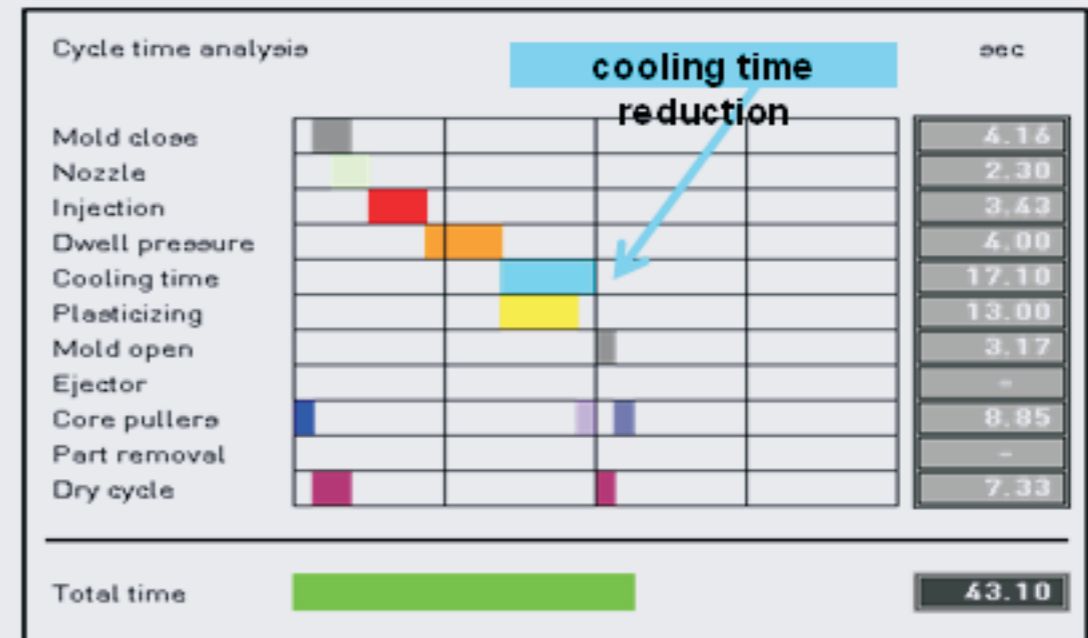
Mode of action

VELOTHENE .. machine settings

Before usage of VELOTHENE



After usage of VELOTHENE





Mode of action

VELOTHENE .. machine settings

Plasticizing time is shorter than cooling time -> temperature reduction

VINTAGE	sec	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Action	Reason	
Injection	1.50	Red	Red																					
Dwell pressure	3.50		Orange	Orange	Orange	Orange																		
Cooling	3.50						Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue											cooling time reduction	better flowability
Mold open, close	1.00										Grey													
Plasticizing	7.00						Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow											
Cycle time	12.00	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	cycle time reduction resulted	

nozzle cover -> parallel plasticizing

More action to be combined as mentioned below

Plasticizing time is longer than cooling time -> faster injection and plasticizing (more RPM)

SPECIAL	sec	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Action	Reason	
Injection	1.50	Red	Red																				injection time reduction	better flowability
Dwell pressure	3.50		Orange	Orange	Orange	Orange																	dwell pressure time reduction	earlier cristallization
Cooling	3.50						Light Blue	Light Blue	Light Blue	Light Blue	Light Blue													
Mold open, close	1.00										Grey													
Plasticizing	7.00						Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow									plasticizing time reduction *	better flowability
Cycle time	12.00	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	cycle time reduction resulted	

nozzle cover -> parallel plasticizing

* motor has reserve (torque)



Advantages

VELOTHENE increases earnings thanks to ..

- lower costs
→ cycle time
- more capacity
→ cycle time
- less energy
→ Temperature
- more recycling



Application Test		1	Molded Component	Standard Crate	Injections	660	
Date / Time	2/12/2008	14:00-15:00	Company				
Machine			Tool (Mold)				
Locking force	tons	550	Year of construction	2007			
Manufacturer	Ferromatic		Cavities	1			
Year of construction	2007		Cooling system	degree*	12		
Machine Rate	€/hr	50	Type	Water			
Other Details			Settings with VELOTHENE				
Selling Price	€	4	Hours Per Month	600			
Over Head per month	€	10000	Normal settings				
Normal settings			Molten mass temp.	degree*	230		
Molten mass temp.	degree*	230	Cooling time	sec.	16		
Cooling time	sec.	16	Cycle time	sec.	60		
Cycle time	sec.	60	Output (performance)	units / hr.	60		
Output (performance)	units / month	36000	units / month	36000			
Raw Material Composition			Raw Material Composition with VELOTHENE				
Description	Qty/Pc (kg)	Rate (€)	Amount	Description	Qty/Pc (kg)	Rate (€)	Amount
HDPE (98%)	1.96	1.2	2.35	HDPE (98%)	1.86	1.2	2.23
Colour Masterbatch(2%)	0.04	7.5	0.30	Colour Masterbatch(2%)	0.04	7.5	0.30
				VELOTHENE (5%)	0.1	2.7	0.27
Total RM Cost			2.65	Total RM Cost			2.80

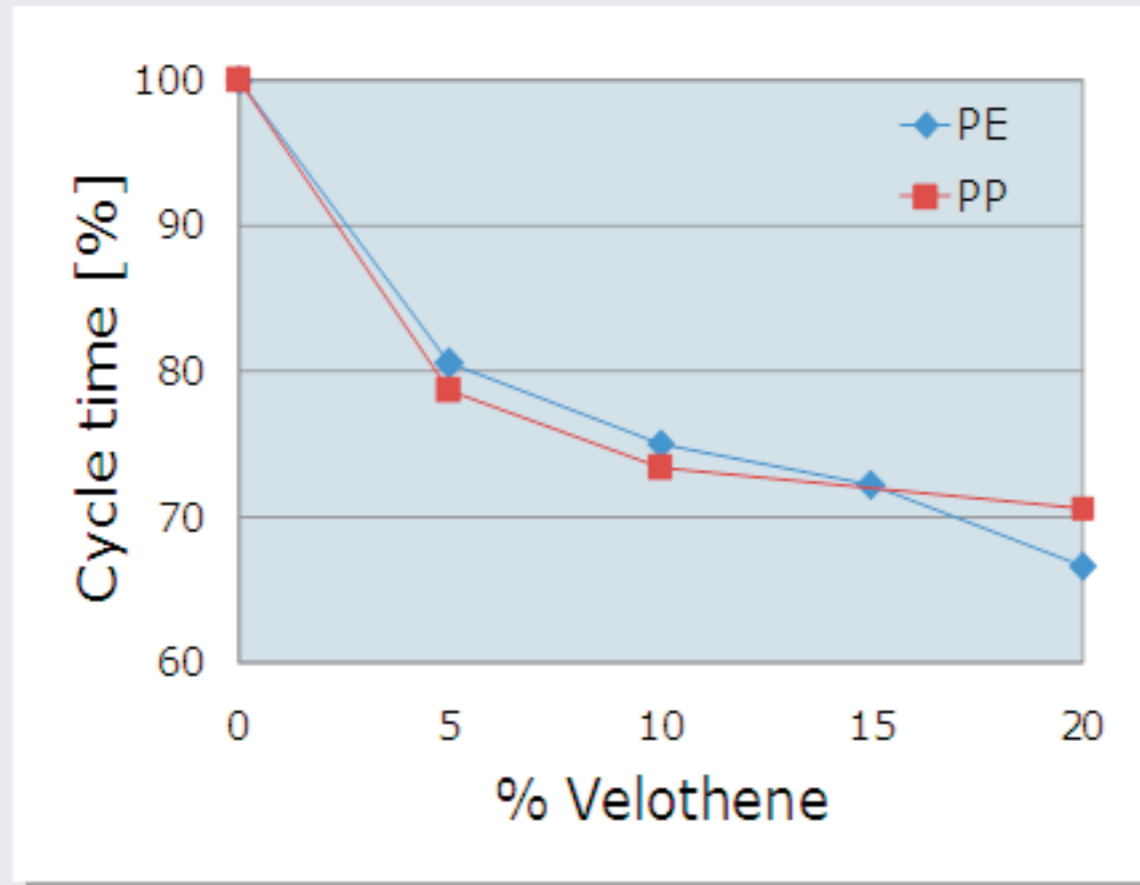
COMPARATIVE ANALYSIS					
Parameter	UOM	Normal Composition	With Velothe	Saving	In %
Cycle Time	Seconds	60	48	12	20%
Output per Month	Nos	36000	45000	9000	25%
Raw material Cost	€	2.652	2.802	-0.15	-6%
Raw material Cost(Total)	€	95472	126090		
Sales Value	€	144000	180000	36000	25%
Gross Margin	€	48528	53910	5382	11%
Machine overheads	€	30000	30000	0	0%
Over Head per month	€	10000	10000	0	0%
Net Margin	€	8528	13910	5382	63%

Savings Per Month Per Machine - 5382 Euro
Savings Per Year Per Machine - 64584 Euro

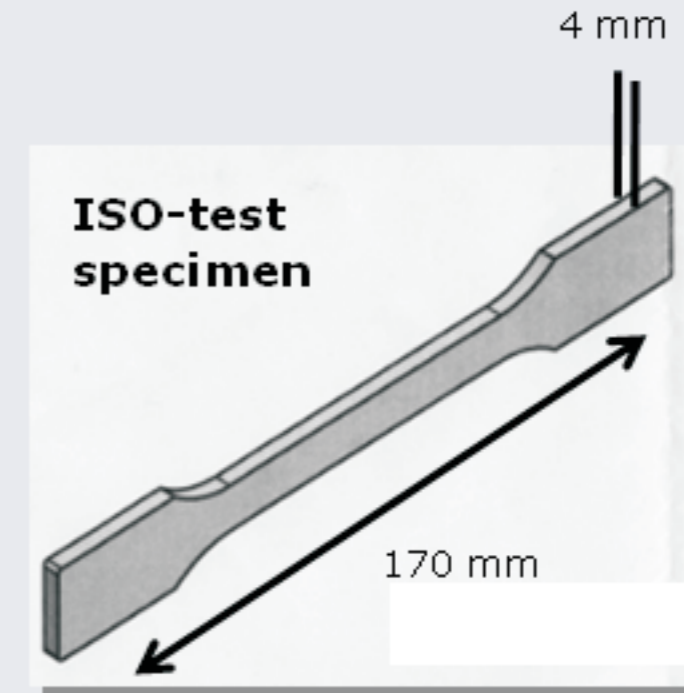


Test results

VELOTHENE .. reduces the cycle time



Manufactured on:
Aarburg Allrounder 270U
(400 kN)



PE: Sabic HDPE
M80063S

PP: Dow C 767-07



Contact..

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Thanks a lot for your attention !

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High Technology Polymer Additive

Revelation of a Revolution