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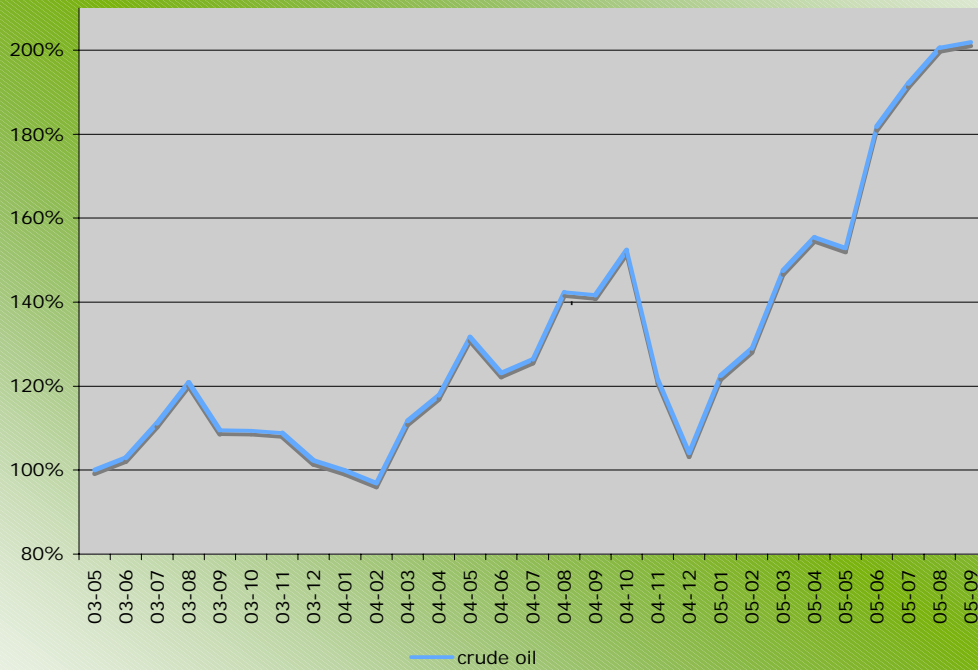
3rd International EIHA conference  
November 28th and 29th, 2005



Dipl.-Ök. (economist) Sven Ortman:

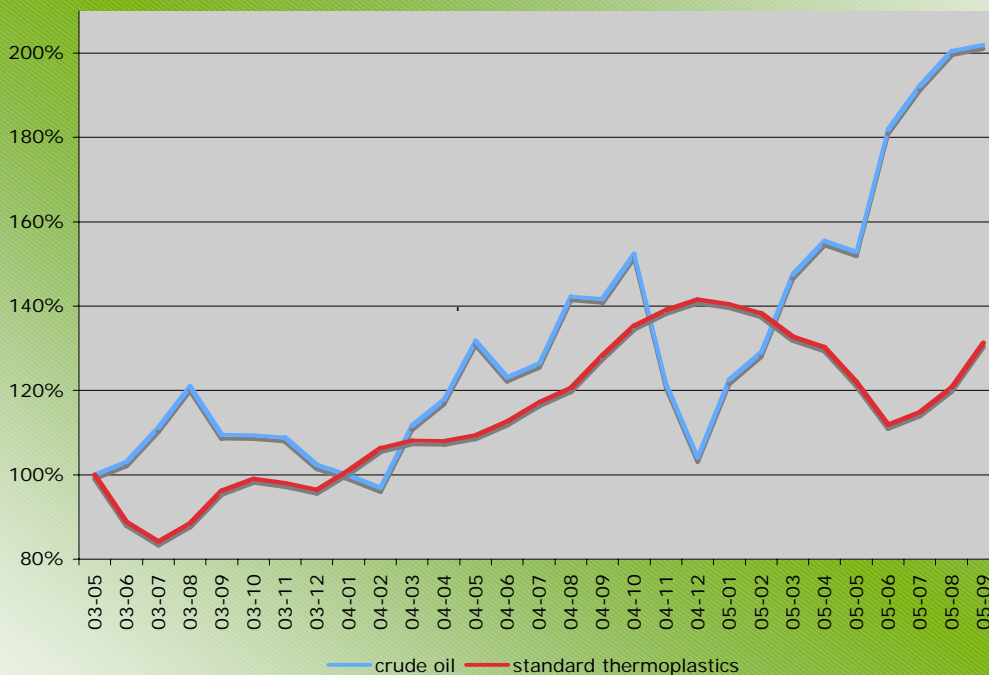
**Price development of hemp and flax fibres and products, mineral oil and synthetic plastics - industry in search of crude oil-independent material supply**

# Crude oil price development



Source: MWV

# Crude oil & standard thermoplastics price development



Source: Kunststoff Information, MWV

Kunststoff Information, 27.10.2005:

*„Die Ankündigungen für Preissteigerungen bei Standard-Thermoplasten ... haben historisch einmalige Dimensionen erreicht.“*

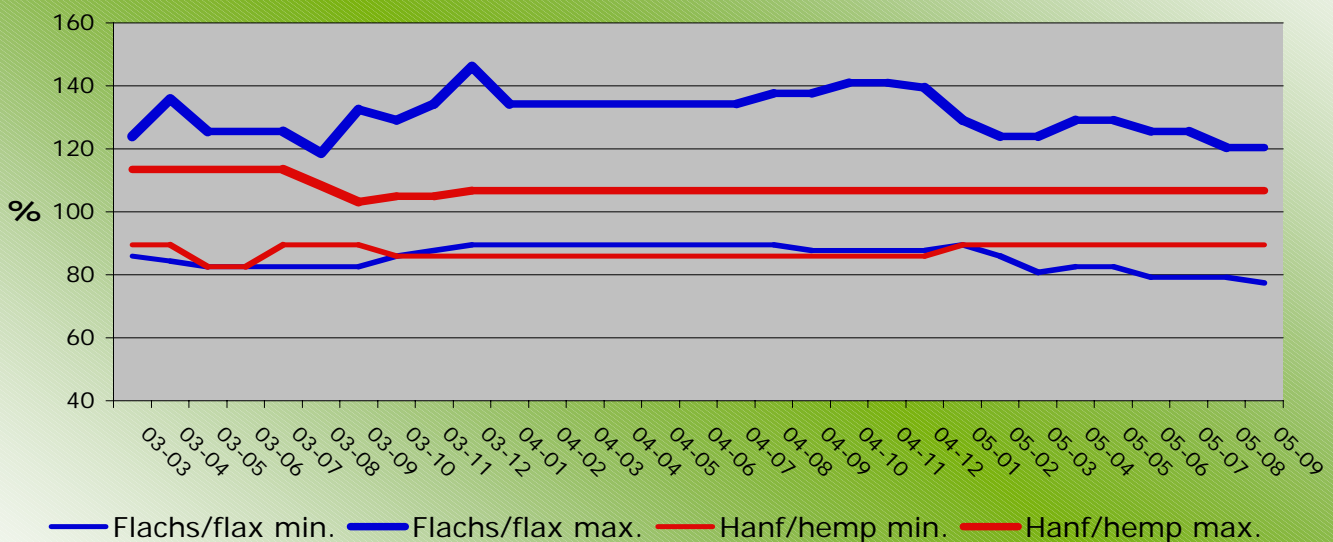
*(The notices for price increases concerning standard thermoplasts ... have reached historically unique dimensions.)*

Fachverband Kunststoff-Konsumwaren, Oct. 2005:

*„PP wird im Zuge von weltweiten Ölpreiserhöhungen und realen Verknappungen von Juni bis Dezember 2005 schrittweise um insgesamt 40% verteuert, womit ein neuer historischer Höchststand erreicht wird.“*

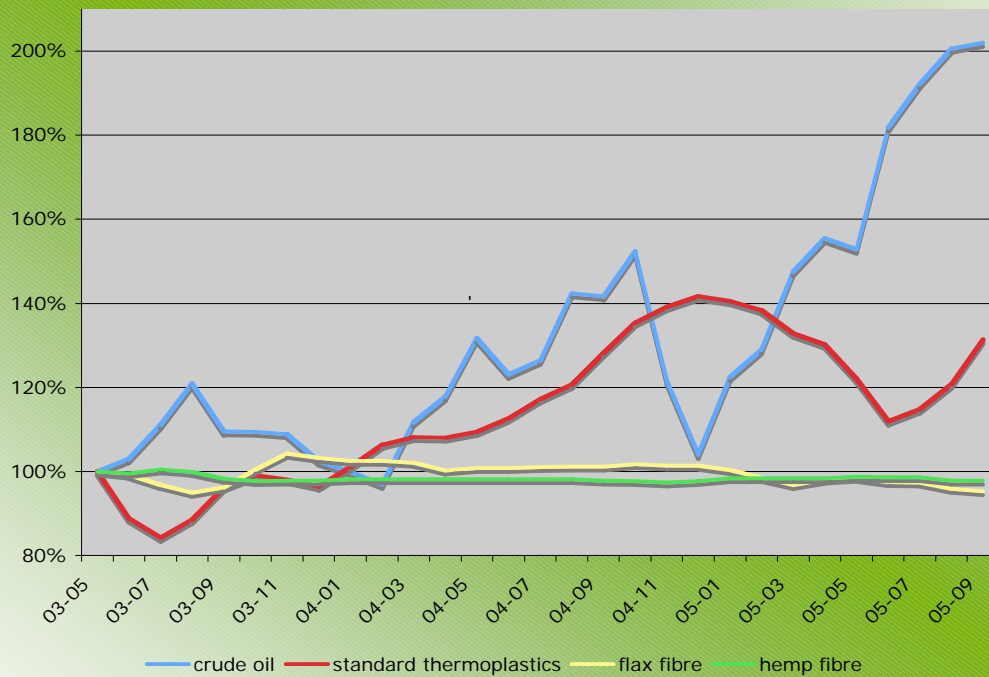
*(PP will due to the world-wide crude oil price increases and real shortages climb in price by 40% from June till December 2005. This will be a new historical record high.)*

### N-Fibre-PriceBase



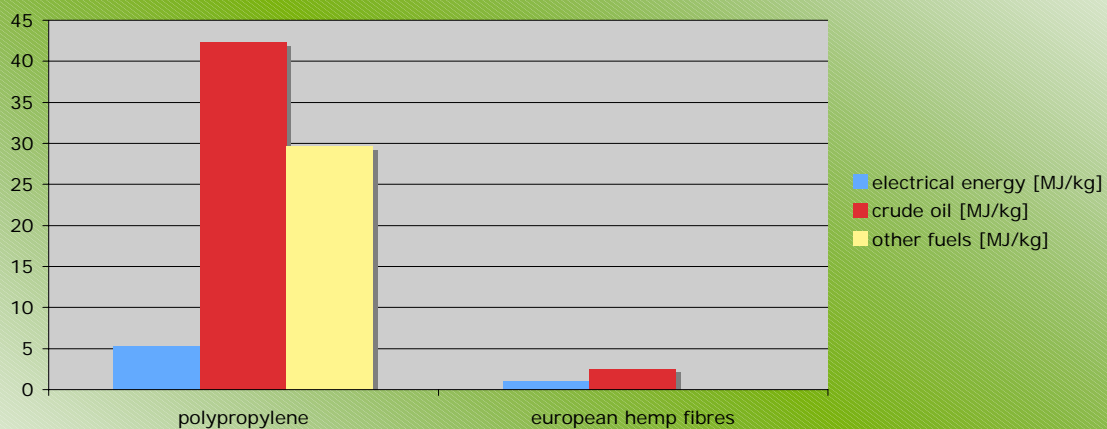


# ... and now the natural fibre price development in context of crude oil and standard thermoplastics



Source: N-Fibre-PriceBase raw data (nova-Institut), Kunststoff Information and MWV

# Input of fossil fuels and electrical energy (equivalents)



...the people know that agricultural products are less influenced by oil price changes even without calculations!

Source: nova-Institut's calculations based on ifeu and Bafa data

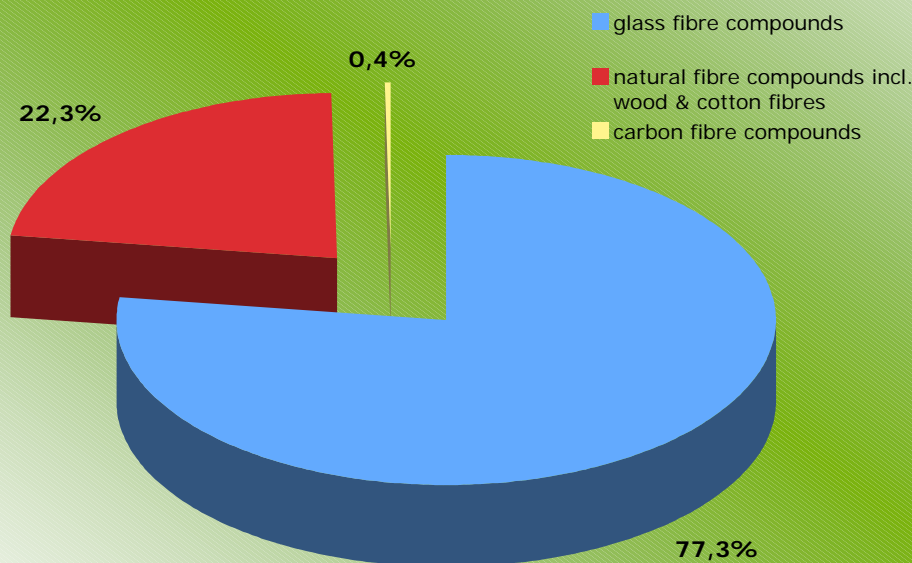
As consultants, we sense an enormous interest in the automotive sector concerning alternative materials including NF composites.

Why?

- they lost hope for falling plastics prices, with good reason
- they need to anticipate their raw material price development well because of multi-year contracts (decisions still influence their business in up to 15 years)
- they already know natural fibres as good composite component
- they know the relative stability of natural fibre prices
- natural fibre composites are conquering markets for exterior automotive parts, are not limited to interior applications
- natural fibre composites have already a significant share in Europe's reinforced plastics market! It's a very serious contender to fully synthetic plastics & composites!

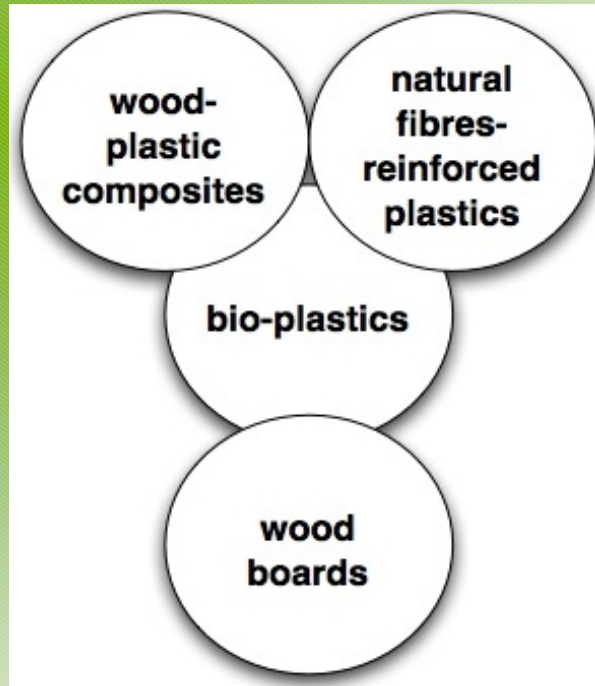
## NF composites a serious contender to established reinforced plastics?

European production of reinforced plastics in 2004



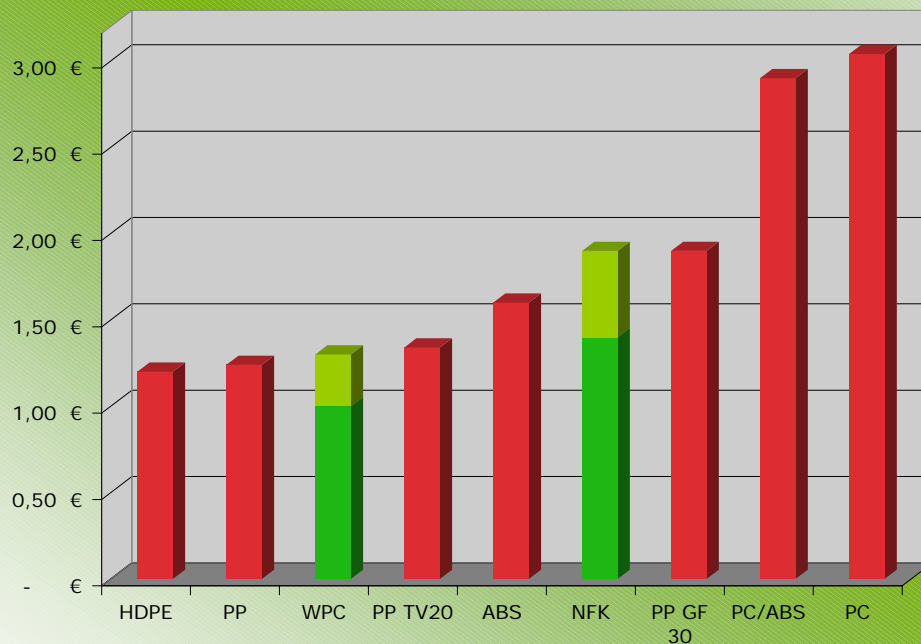
Flax and hemp reinforced composite shares alone constitute about 3.25%.

Not exactly. Actually, they're a large chunk of the 'established' reinforced plastics!



## How do natural fibre-composites (injection moulding) compare in price?

typical granules prices in late 2005





## Conclusions?

The industry (especially the automotive sector) woke up and chooses its raw materials portfolio anew.

Natural fibres have a great chance to win their share, especially in the automotive sector which knows them.

The scarcity of standard plastics and their pre-products will last at least until about 2007/2008 - an exciting timeframe for anyone who wants to substitute crude oil-dependent raw material.

Even if new production facilities reduce the production bottleneck... Long-term material planning reaches out to 2015-2020 in the automotive sector - few if anybody believe that crude oil will be cheap enough for production of cheap plastics after 2010.

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