

SAP Old and New — Will New Producers Change the Game?

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StarTrek © Paramount Pictures

3 topics for discussion

What is really happening with capacity?

Is there ever anything new in SAP?

What will drive future technical changes?



What is really happening with capacity?



Acrylic Acid Major Projects

LG Korea **on time** Yeosu + 160kT 2012

Jurong Chem **delayed** Taixing 2 + 160 kT end 2012

CNOOC **started** Huizhou + 140 kT Q3 2012

SAMCo **on time** Saudi Arabia + 160kT 2013

Nippon Shokubai **on time** Indonesia mid 2013

Nippon Shokubai **on time** Himeji + 80kT mid 2013



Acrylic Acid 'dead' projects

Damman 7 Saudi Arabia **cancelled** 2014

Jurong Chem **wait** Taixing 3 until demand improves

Sichuan PC **cancelled** Chengdu (190 kT)



Demand for Acrylates remains weak globally

China is not saving the world this time around



2011 view new SAP CAPACITY HELP?

Producer	Location	Capacity	Timing
Nippon Shokubai	Japan	60	Q4 2010
Sumitomo Seika	Japan	24	Q4 2010
Nippon Shokubai	Indonesia	90	End 2012
San Dia Polymer	China	70	April 2011
BASF	China	60	2012
LG Chem	Korea	108	2011/2012
Danson	China	100	2010/ 2011
Evonik	Saudi Arabia	80	End 2013

2012 view new SAP CAPACITY HELP?

Producer	Location	Capacity	Timing
BASF	China	60	2014
Evonik	Saudi Arabia	80	End 2013
LG Chem	Korea*	108	2011/2012
Nippon Shokubai	Indonesia	90	Late 2013
Danson	Yixing	320 (4 X 80)	As required!
Sumitomo Seika	Himeji	54	End 2012
FPC	Taiwan	40	End 2012



SAP capacity 2010 – 2013, kT

	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
Insight 2011	2098	2277	2721	2801
Insight 2012	2078	2307	2518	2860



No big change to capacity predictions

So what about demand?



Growth in demand is slowing...

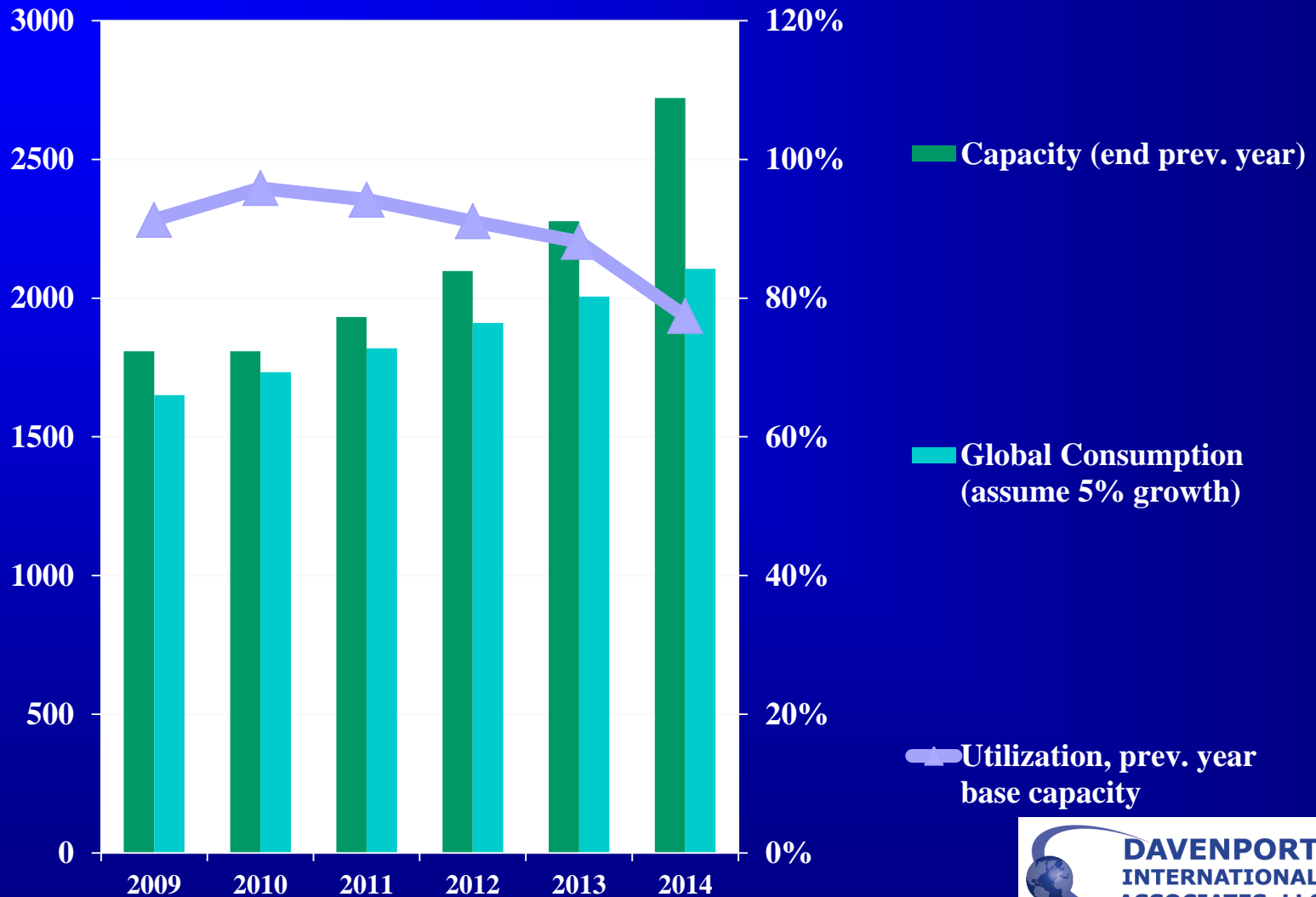
Diaper makers are delaying investment to await demand growth

Overall 2012 growth closer to 5% than 7%

Good news for buyers, at least short term!



At 5% growth, SAP Utilization falls < 80%



Q: Is there ever anything new in SAP?



A: Not really!



1980's **1st generation polymer**

Focus on absorption capacity



Early 1990's 2nd generation polymer

“Core shell”



Everything since then has been a variation on a theme with improved performance via:

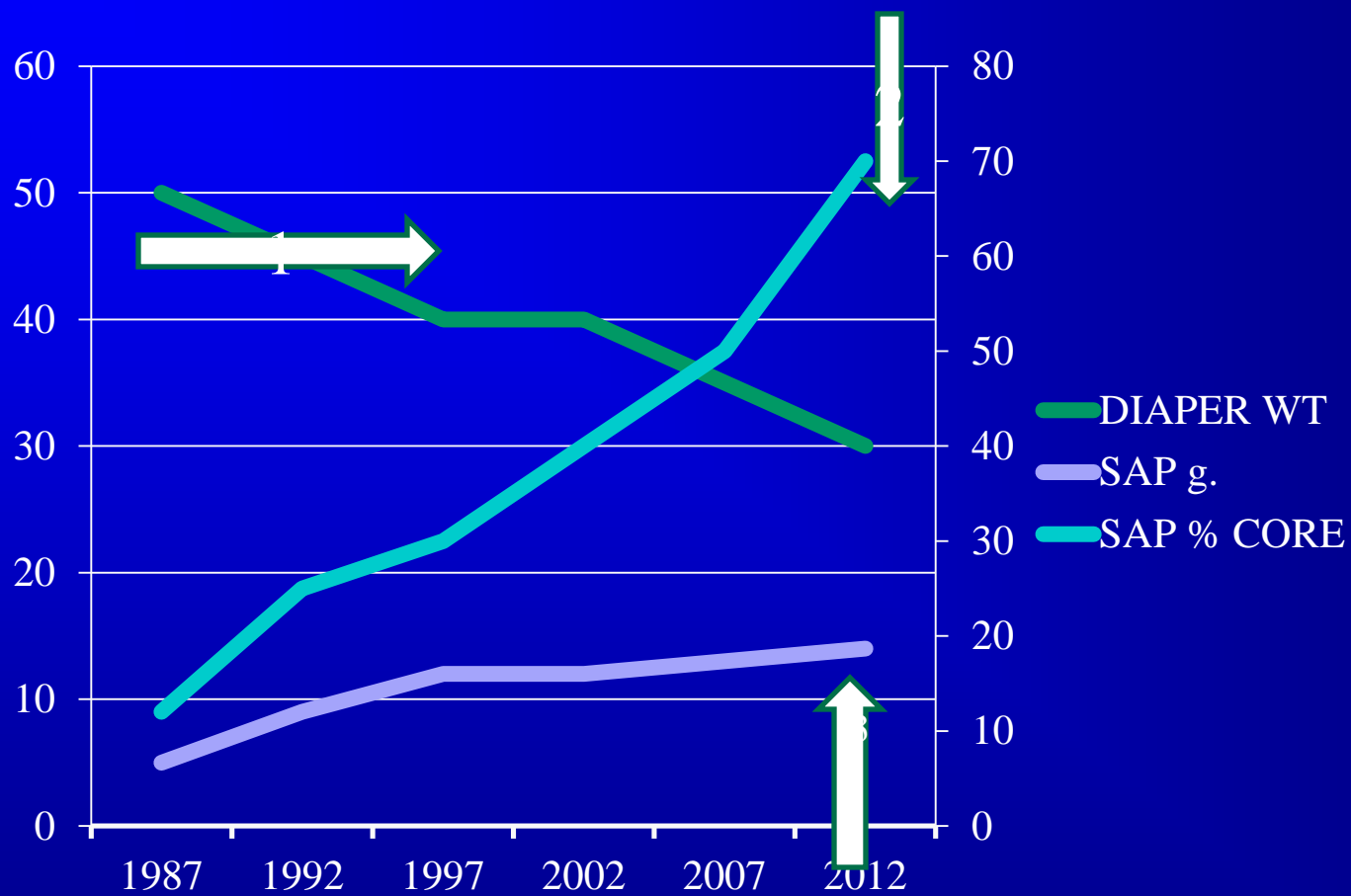
Higher AUL

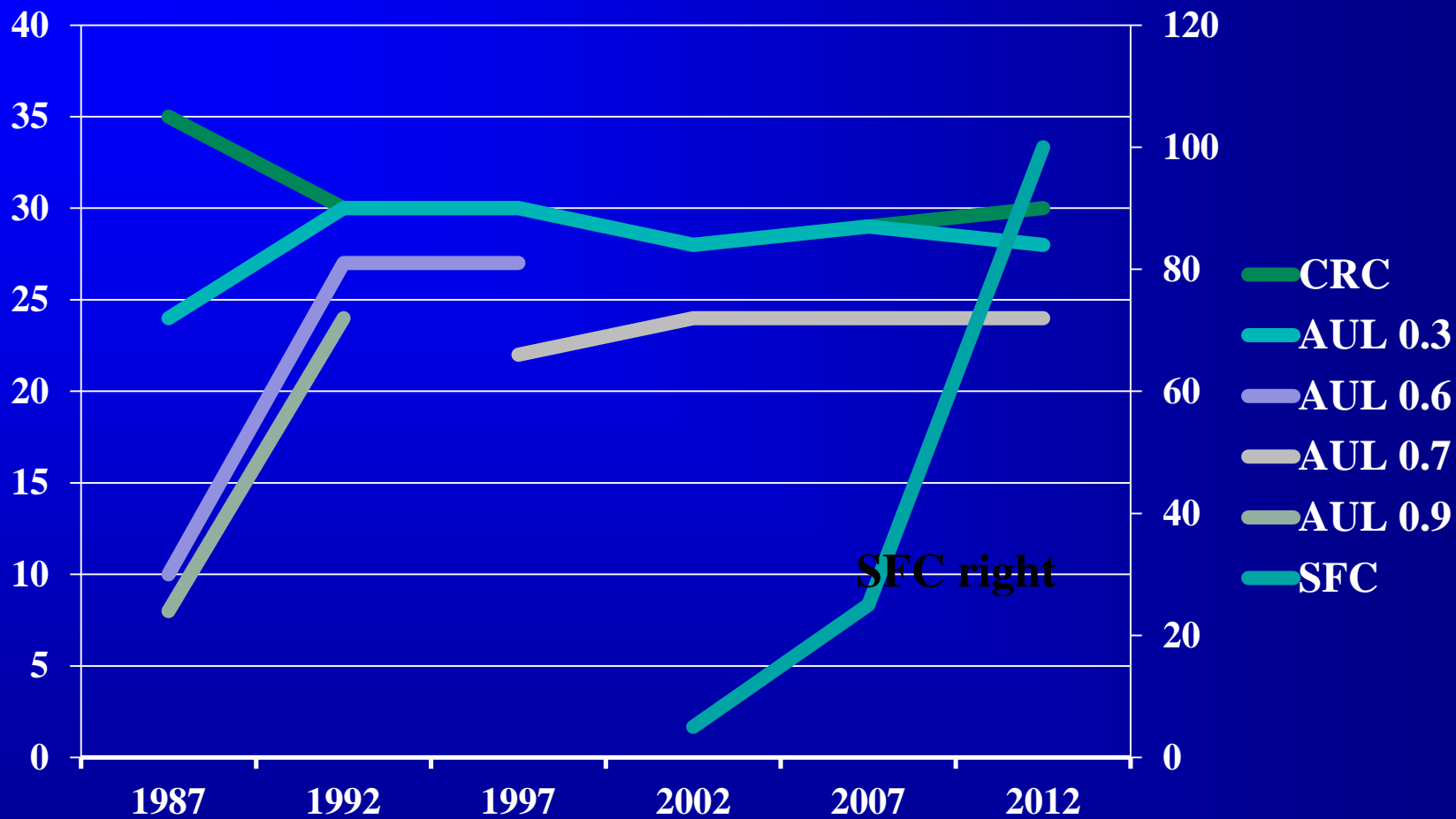
Permeability

Saline flow conductivity

(& the patent dances continue)







Particle size plays a role and is more carefully controlled...



So, what will drive future technical changes?



What could be the drivers of change?

- **Low to zero fluff diapers**
- **Green Feedstock**
- **Green SAP**
- **Replacement of Acrylic Acid**
- **Customers**



Low to zero fluff diapers

- **Permeability v. Retention**
- **Modified Diaper lines**
- **IP challenges**
- **Innovation needed...**

New diapers are 80-100% SAP core

Three possible structures:

**A) Pulp free – Polymer Gel &
Adhesive**

B) Pulp free – no adhesive

C) Preformed (airlaid) core



Drylock new diaper plant

10th Sep 2012 announcement

Bart Van Malderen – ex Ontex Executive

Drylock Technologies - new plant in Czech Republic

“Fluff free” diaper for Lidl and other private label customers

Target early 2013 -- 1.5 billion diapers per year

Glue free and fluff free patented technology

NOT A PREFORMED CORE

This trend will restore SAP growth as global diaper producers invest in new machinery and go to thinner cores



Green Feedstock, so what?

ADM*

Bio Amber

BASF/ Cargill*/ Novozyme

Myriant

Dow/ OPX Bio



**Carbohydrate conversion to AA
precursors such as:**

3-hydroxypropionic acid (3-HP)

2-hydroxypropionic acid (2-HP)



Renewable feedstock is only one part of the story....

Can it compete with Propylene medium term?



Green SAP, so what?

So far, all 'biodegradable' SAP, has had a reduction in useful absorption properties and increased cost



Or are early stage and unproven

**Or contain undesirables such as
Acrylamide grafts**



Examples include:

Lysac (ADM) SNAP

Exotech Bio Solutions

Chalmers University of Göteborg

(Zamani PhD, 2010, carboxymethylation of chitosan from cell wall of fungi)

Others



Replacement of Acrylic Acid

It is still by far the most cost effective molecule and will not be easily pushed aside



Which leaves us as always with:

Customers!

Either in partnership, or playing catch up, or trying to find ways around patents!



So, no dramatic switch is likely

(...the industry is safe...)

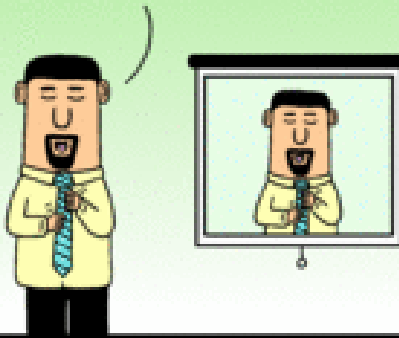


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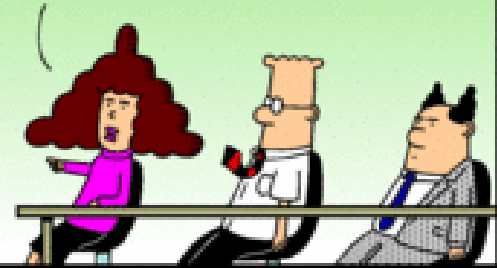
WHILE OUR USERS WILL
BE PORTRAYED BY THE
COOLEST GUY IN THE
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SOON THE MEETING
TURNED UGLY

THEN WHY ARE YOU
SHOWING A SLIDE OF
A GIANT @\$\$\$#0%*?



THANK YOU

Ian Davenport

