

Innovationswettbewerb in der EU Fallpraxis: *GE/Alstom* and *Dow/Dupont*

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Competition



Agenda

- Innovation effects in *GE/Alstom*
- Innovation effects in *Dow/Dupont*
- Preoccupations of some commentators
- Legal Foundations
- Economic foundations
- Enforcement policy and practice in the US and the EU
- Conclusions



Heavy Duty Gas Turbine (HDGT)



- costs about 25-45 ml EUR
- weights about 430 tonnes
- takes about 9 months to assemble
- is about 1/3 of the power plant value
- is bought through tenders

What's the market worth?

Sales of new machines EUR **290 ml** p/y in the EEA EUR **3.3 bn** p/y (50 Hz) WW

Servicing is about double the value of new sales and the profitable part of the business

Customers are big electricity utilities





Market shares in the overall 50 Hz HDGT market

| | Sales (MW) | | Installed base | Capacity (# | R&D spent |
|-----------|------------|----------|----------------|------------------|-----------|
| | EEA | WW exc. | (# 618) | GIS | |
| | | China & | | | |
| | | Iran | | | |
| GE | [20-30]% | [40-50]% | [50-60]% | [40-50]% | [30-40]% |
| Alstom | [20-30]% | [10-20]% | [10-20]% | [10-20]% | [30-40]% |
| GE+Alstom | [50-60]% | [50-60]% | [60-70]% | [50-60] % | |
| Ansaldo | [10-20]% | [5-10]% | [0-5]% | [5-10]% | |
| MHPS | [0-5]% | [5-10]% | [5-10]% | [10-20]% | |
| Siemens | [30-40]% | [30-40]% | [20-30]% | [20-30]% | |



In the overall 50 Hz HDGTs market loss of a significant and close competitor of GE

- Alstom significant and close competitor of GE: •
 - competed on par in the EEA
 - global player challenging GE also outside EEA
 - best in class operational flexibility well suited for Europe
 - targetet same customer groups as GE
- **MHPS** is a more distant competitor in relevant market: focus more on 60 Hz and within 50 Hz more on Asia ٠

 - MHPS HDGTs best suited for base load and less flexible than Alstom's or GE's => more distant competitor in the EEA
- **Ansaldo** is a niche player with (1) more limited technological capabilities and portfolio than • the 4 global OEM's, and (2) more limited geographic focus
- Due to **high differentiation**, for many customers reduction of alternatives from **4 to 3 or** ٠ 3 to 2 while entry barriers are very high

=>Negative effects on prices and choice



Elimination of an important innovator

1. Alstom **important competitive force** from an innovation and technology point of view

- Part of top 3 players: (1) R&D spent, (2) engineering resources and (3) cutting edge test facilities
- GT 13, GT 26 and GT 36 high-end products in respective segments: strong in efficiency, best in flex
- GT 36 project => ability to develop machine at the technology frontier
- Further important pipeline development plans in HDGT technology
- In demanding EEA market Alstom commercially as strong as GE and Siemens
- Market participants confirm that innovation introduced by Alstom has pushed competitors to innovate
- From an innovation and technology point of view Alstom stronger than its market share suggests
- 2. Post-merger GE planned to **discontinue** the GT 36, the GT 26 and more in general high end gas turbine research on the basis of Alstom technology
- GE's intention to discontinue the GT 26 technology would have had significant negative effects on its ability and incentives to develop significant performance upgrades for the installed base of the GT 26

=>Negative effects on innovation





INTRODUCTION TO CROP PROTECTION INDUSTRY



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PRICE vs. INNOVATION EFFECTS

| What we look at: | Effect on: | Theory of Harm |
|--|--|--|
| Existing products | Product / Price competition (para 24 et seq. HMG) | Elimination of competition between existing products with non-coordinated effects on price and product competition |
| Products in development and existing products | Product / Price competition (para 24 et seq. + 38 + 58 to 60 HMG) | AIs which have entered or are about to enter the development stage (80-90% likelyhood of coming to market) Loss of potential competition with existing products or between forthcoming products |
| Overlapping lines of research and early pipeline products | Innovation competition (para 8 + 24 et seq. + 38 HMG) | Likely discontinuation, delay or redirection of overlapping lines of research and early pipeline products in specific innovation spaces |
| R&D efforts and output of the parties and their industry competitors | Innovation competition (para 8 + 24 et seq. + 38 HMG) | Structural reduction of incentives and ability to achieve the same level of innovation as the Parties separately absent the merger leading to a significant loss of innovation competition in the industry |





STRUCTURE OF ASSESSMENT OF INNOVATION

Market structure and features

- Oligopolistic industry (with only 4 remaining integrated competitors)
- High barriers to entry and expansion for innovation competitors
- Concentration at innovation space level, where innovation competition takes place, even higher
- In CP industry rivalry and avoiding cannibalization of own sales are key drivers of innovation
- Past concentration in the industry accompanied by a decrease in innovation efforts and outcomes in line with what economic theory would predict

Importance of DuPont and DOW

• Both Parties, and in particular DuPont, more active and important innovation competitors as regards innovation competition than their downstream industry shares and their innovation expenditure shares suggests

Closeness

• The Parties have been in the past, and are likely to continue to be in the future, close and important innovation competitors, competing head to head in a number of innovation spaces

Effects (see next slide)

Reactions of competitors

• The availability of alternative R&D players not likely to offset the reduction of innovation output brought about by the Transaction



Effects of the merger on innovation

- Likely discontinuation, delay or reorientation of overlapping lines of research and pipeline products
 - Publicly announced objective of the merger
 - Detailed closeness and competitor analysis
 - Evidence on specific candidate
 - Capacity limitation and spending targets
- Likely significant and lasting reduction of incentives and ability to develop new products
 - Counterfactual: planned R&D efforts and targets absent the merger
 - Post-integration plans
 - R&D spent
 - FTE cuts
 - Site closures
 - Innovation out-put targets



Concerns and remedies

Concerns:

| Crop Protection | Product Competition | Selective Herbicides cereals/rice/pasture/OSR/sunflower | |
|--------------------|------------------------|---|--|
| | | Chewing Insecticides | |
| | | Rice fungicides | |
| | Innovation | Overlapping lines of research and early pipeline products | |
| | competition | R&D efforts and output | |



Commission ensures **DOW/DUPONT** merger preserves price and innovation competition in crop protection





Preoccupations of some commentators

'Novel theory of harm'

- ...'a novel theory of harm in EU merger control'
- ...'unprecented and far reaching R&D remedy'...
- ...'significant tension with US approach for example in Genzyme/Novazymes'

'Economists disagree on effects of mergers on innovation'

- Schumpeter: 'market power provides incentive to innovate'
- Concentration 'may reduce scope for imitation/improve scale economics/generate cost efficiencies'
- =>'Complicated economics' with `multidirectional effects';

'Uncertainty' of future innovation

- 'unexpected sources' of innovation
- 'disruptive innovation'
- 'uncertain success' of future innovation





Legal foundations

HMG 8

- not just right, but **duty** to prevent those horizontal mergers which significantly harm innovation
- Section on non-coordinated effects applies mutatis mutandis also to innovation effects (price effects language is 'shorthand')

HMG 38:

- HMG 38, 81 recognise that **some** horizontal mergers may be good for innovation
- But: significant unilateral effects can occur in those mergers where two important innovators merge
- overlapping pipelines is **merely an example** for unilateral effects
- No reference to discontinuation or closeness of pipeline to the market as precondition for harm

HMG 80:

 cost reductions which are result of innovation out-put restriction are not efficiencies which benefit consumers

EU antitrust rules:

• Innovation effort and reduction of number of competing R&D poles are also protected under **EU antitrust rules**: see Guidelines on horizontal cooperation agreements (par 119) and on Technology transfer agreements (par. 26)



Economic foundations

- Much more **common ground on economic foundations** than assumed by some: *Gilbert* (early 90s), *Baker, Shapiro*
- Competition **key driver** of innovation (*Porter*, contrast with Soviet Union...)
- **Schumpeter misread**: advocates 'creative destruction' through more innovation competition; <u>not</u> creative M&A to reduce innovation efforts
- **Basic mechanism** clear: competition creates incentives to innovate to
 - capture sales from competitor
 - protect existing sales
- Horizontal merger in narrow oligopoly between two close and important innovators capable to reduce innovation incentives
- Depending on presence of **countervailing** industry features /facts/efficiencies some horizontal mergers may on balance be good for innovation
- Discontinuation of closely competing pipeline products is neither necessary nor sufficient condition for harmful innovation effects to occur
- **Innovation effects matter**: Dynamic effects often trump static effects



US merger guidelines

- **Specific section** on unilateral effects on innovation
- Theory of harm based on **standard unilateral effects**: diversion, internalisation etc
- Distinguishes
 - <u>immediate effect</u> on innovation due to curtailment of ongoing product development, and
 - <u>medium term effect</u> on innovation due to reduced overall incentives to initiate development of new products
- Medium term effect relies on merger of two out of a limited number of firms with specific R&D capabilities in a specific area
- US guidelines recognise that mergers may increase innovation, but explicitly treat all countervailing effects (appropriability, scale etc.) as <u>efficiencies</u>



US and EU case practice

US

- AT&T/T-Mobile (2011)
- Applied Materials/Tokyo Electron (2015)
- Halliburton/Baker Hughes (2016)

EU

- *Deutsche Börse/LSE* confirmed by General Court
- GE/Alstom
- Halliburton/Baker Hughes
- Intel/McAfee



In practice: evidence-based investigation e.g. in *Dow/Dupont*

| | Product/price competition | Innov. effects at innovation space level | Innov. Effects at industry level | |
|-------------------------------|---------------------------|--|---|--|
| Market structure and features | \checkmark | Concentration industr barriers; importar mer | ry/innovation spaces; ice of rivalry; past gers | |
| Importance and closeness | \checkmark | Internal docs; patent shares; AI shares; past and current products; overlaps for lines of research and pipeline products | | |
| Efficiencies | — | Not substant | iated/proven | |
| Effect on competition | Assumed | Partly direct, partly indirect evidence | Direct evidence on future spent, FTEs, capacity | |
| Effect on price/innovation | Assumed | Partly direct evidence, partly assumed | Direct evidence on targeted output restriction | |



Conclusions

- Concerns in *GE/Alstom* and *Dow/Dupont* on **both** price and innovation competition
- Respective remedies based on **both** price and innovation competition concerns
- Innovation part is based on **established law** and **economics**
- In contrast to standard price cases or previous innovation cases (e.g. *Deutsche Börse*) direct evidence on effects on innovation competition and output
- Enforcement against medium term innovation effects beyond short term discontinuation of existing pipeline products is foreseen by the rules and routinely done both in the EU and the US

NEW WINE IN OLD BOTTLES



European Commission

Back up slides



Market structure (1): Past consolidation affecting innovation?

1. Concentration increased



2. Innovation output decreased (with particular incidence in the EEA)

Figure 186 - Regional focus of active ingredients introduced and those in development

| Region | 1980 - 1989 | 1990 - 1999 | 2005 - 2014 |
|---|---------------------------|---------------------------|--|
| Worldwide | 123 | 128 | 73 |
| Europe | 41 | 40 | 12 |
| Share Europe (%) | 33.3 | 31.3 | 16.4 |
| 980 - 1989 otal = 123 Active Ingredients | 1990 - 199 Total = 128 | 9 3 Active Ingredients | 2005 - 2014 Total = 73 Active Ingredients |

3. Innovation efforts decreased







4. EBITDA increased significantly in the last years in crop protection =>

=> Profitable innovation output restriction is feasible

5. Various market participants, including representatives of the Parties, state publicly that consolidation has contributed to fewer AIs being launched

Competition



Market structure (2): Features of innovation/competition

- Innovation competition takes place in **innovation spaces** characterised by specific lead crops/pests combinations
- Rivalry/competition for that innovation space is an important driver of innovation
 - Divert future sales from rival innovator
 - Protect existing sales
- Fear of cannibalisation of own existing sales is a disincentive to innovate for exactly the same innovation space

=> market features of the crop protection industry suggest that a merger between innovation competitors in a concentrated setting likely results in a decrease in the incentives to innovate by (1) reducing rivalry and (2) increasing incentives to avoid cannibalisation



CP/Innovation

Market structure (3): Concentration at industry and innovation spaces level

- Narrow industry oligopoly of only 5 global integrated R&D players
 - globally around [80-90]% of the 2015 downstream turnover of products that include new Als launched over the past ten years is accounted by Als launched by the Big 5
- Innovation competition in crop protection is characterised by high barriers to entry and expansion:
 - regulatory, scale and R&D investment costs
 - no entry likely
- Other companies are active in some stages of the innovation process, but are not comparable rivals to the Big 5 as regards innovation competition
 - Monsanto
 - FMC
 - Japanese companies
- Concentration of R&D players at innovation space level is higher than at industry level: around 80 % of European crop protection sales are served by 4 or less of the big 5 players



Important and close innovation competitors

- Dow and in particular DuPont are more important innovators than their market share or their R&D expenditure share suggest
 - Ambitious strategic targets for efforts and output (number of new Ais and innovative impact)
 - Track record and AI shares show commercial success of innovation
 - Patent quality analysis based on citations shows high relative and combined strength
 - Strong pipeline
- Dow and DuPont close innovation competitors
 - Past head to head innovation competition in herbi/insecticides
 - Ongoing and future head to head innovation competition
 - Few other innovators in same innovation spaces