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EXECUTIVE SUMMARY

Nowadays, a great part of the goods produced within the chemical industry in Belgium is still being transported by other means of transport (road, pipelines, ...) than rail : based on the 2017 sustainability report of essenscia¹ : rail only represents approximately 5% of the freight transport volume in the chemical & life sciences industry² where pipelines represent a much higher level of freight transport with approximately 30%.

One of the major improvements imagined for the Belgian rail freight transport would be to set up industrial cluster zones gathering several value added services for rail such as repair and cleaning facilities³ since Belgian chemical companies must still nowadays go abroad in order to clean/repair some of their fleet.

In order to evaluate the potential interest of the Belgian chemical industry for the setup of value added services for their rail business in Belgium, essenscia, the Belgian chemical & life sciences federation, organized interviews & data collection with Belgian chemical companies coming from the different chemical clusters in Belgium.

The Belgian chemical landscape is covered as much as possible in this report⁴ in order to give a good insight of the current needs of the chemical companies coming from all parts of Belgium.

The conclusion is a strong advocacy from the Belgian chemical industry for the setup of joined cleaning-repair installations in Belgium. A combination of both Rail tank Cars and Tank containers is a must in order to have a real business case.

¹ Referring to the year 2015

² Due to the confidentiality of the data, this % is based on numbers from 2013.

³ Some other services, not included in the scope of this study, may be considered as well : parking, wagon surveillance, ...

⁴ Based on the feedback and the data collected

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1. Introduction

One of the goal of the 'Less than a Wagon Load' project is to develop rail solutions to shift goods from the road to the rail and support the modal shift. In order to do so, the LTWL consortium is trying to foresee which solutions can be developed in favour of rail freight transport within industrial clusters.

Nowadays, a great part of the goods produced within the chemical industry in Belgium is still being transported by other means of transport (road, pipelines, ...) than rail : based on the 2017 sustainability report of essenscia⁵ : rail only represents approximately 5% of the freight transport volume in the chemical & life sciences industry⁶ where pipelines for example represent a much higher level of freight transport with approximately 30%. To increase the part of the freight transport devoted to rail, some improvements have to be realized in Belgium within the rail freight business from an operational and infrastructural points of view. One of the major improvements imagined for the Belgian rail freight transport would be to set up industrial cluster zones gathering several value added services for rail such as repair and cleaning facilities⁷ so that the chemical companies reduce the costs, distance & time spent to clean or repair these wagons (or the wagons they rented to rail leasing companies). Indeed, we will come back later on that but the distances and the costs that chemical companies must bear today remain too high.

The Antwerp cluster is one of the biggest chemical clusters in the world. Many world class chemical companies have some of their production units in the Port of Antwerp⁸: chemicals generated more than 3 billion euros of Value Added in the Port in 2016⁹ and employed almost 11.000 people. Moreover investments up to nearly 800 million € in 2016 were recorded as well. Most of the chemical companies have and use rail facilities to transport some of their goods. Nevertheless, Belgium has always been a country of traditions for chemicals : chemical companies are not only located in the Port of Antwerp but these are also present in other clusters in Flanders (near Gent and the Albert canal, near Zeebrugge, in Limburg), in Wallonia (near Feluy, near Tertre) ...

We will try, therefore to cover the Belgian chemical landscape as much as possible in this report in order to give a good insight of the current needs of the chemical companies coming from all parts of Belgium. Depending on their location in Belgium, you will see that the needs of the companies may differ very much.

In order to evaluate the potential interest of the Belgian chemical industry for the setup of value added services for their rail business in Belgium, essenscia, the Belgian chemical & life sciences federation, organized face to face meetings with Belgian chemical companies coming from the different chemical clusters in Belgium. In order to collect already some feedback from the Belgian chemical companies, essenscia has sent a questionnaire covering cleaning & repair services but also other questions related to rail freight services in Belgium in order to determine the potential areas of improvement for the rail freight transport in Belgium for the chemical industry.

⁵ Referring to the year 2015

⁶ Due to the confidentiality of the data, this % is based on numbers from 2013.

⁷ Some other services, not included in the scope of this study, may be considered as well : parking, wagon surveillance, ...

⁸ See Map of the Port of Antwerp in annex in this report.

⁹ The economic importance of the Belgian ports : Flemish maritime ports, Liège port complex and the port of Brussels – Report 2016,n°348, National Bank of Belgium, April 2018 : approximately 30% of the whole Value Added generated in the Port of Antwerp.

Organizing these face to face meetings rapidly appeared to be impossible considering the extreme occupational rate of the logistics, supply chain, rail managers of these companies. Once the companies had sent their answers to this questionnaire, essenscia has reached them personally in order to receive some more insights & explanations on the answers received. Besides, this has been discussed as well during rail working groups gathering several chemical companies around the table.

Some persons or companies were unreachable despite numerous tries. Nevertheless, thanks to the answers of chemical companies, essenscia succeeded in covering several regions & chemical clusters gathering the most important chemical companies using rail as a mean for freight transport.

The conclusion at 1st sight is a strong advocacy from the Belgian chemical industry for the setup of joined cleaning-repair installations in Belgium, with different locations depending on the companies themselves. We will seek into quantitative details further in this report.

2. Geographical scope of the feedback

As explained in the introduction, Belgium is a country where chemistry is strongly anchored in the industrial landscape. Obviously, the Port of Antwerp represents the greatest chemical hotspot of Belgium with many large chemical companies located. We tried to contact as many as possible but for different reasons, not all of them answered.

Yet, as explained shortly in the introduction, the Port of Antwerp is not the only chemical cluster in Belgium. Essenscia has therefore contacted companies coming from both regions in Belgium as well. You will find hereunder the list of the companies reached and their coverage in Belgium.

Companies established in the chemical cluster of Antwerp

BASF, Total, Borealis, Ineos, Inovyn, Arlanxeo, Evonik, Covestro, Ashland, ADPO, ITC Rubis, Vopak Oil Tanking, Exxon Mobil, Air Liquide (not relevant as they don't use any more rail)

Companies established near Gent (and nearby)

Eastman (not really relevant for them as the opportunities aren't so big), Kronos (not relevant for them)

Companies established in Limburg

Vynova Tessenderlo, BP

Companies established in Zeebrugge

Proviron

Companies established Seneffe (& nearby)

Ineos Feluy (no quantified answer but manage their cleaning operations), Syngenta Chemicals (not relevant as they don't use any more rail), Prayon (not important enough), Dow Corning (not relevant for them as they don't use any more rail).

Companies established near Mons

Yara (no quantified data)

Additional remark related to the scope of the feedback

It appeared quickly from the answers received by Essenscia from chemical companies that these weren't usually the parties managing directly their contracts with cleaning or repair companies. Indeed, chemical companies often rent their wagons from wagon leasing companies such as VTG, Ermewa, GATX, Wascosa representing all together approximately 60% of the freight wagon fleet privately owned in Europe¹⁰.

Essenscia has therefore contacted these companies as well. The answers received were various but it seemed difficult to wagon owners to clearly estimate the amount of wagons devoted to chemical

¹⁰ See report 6.1 'Analysis of the market demand for cleaning in the Antwerp Chemical cluster for wagons, trucks and containers' from Philip Van Den Broeck from Trafuco (WP6, Less than a Wagon Load).

activity within the Antwerp cluster and/or to the rest of Belgium. We therefore did not receive quantified data from wagon owners companies.

3. Issue faced by chemical companies regarding cleaning and/or repair operations in Belgium :

Most of the times, Belgian chemical companies are really struggling to meet their needs in terms of cleaning & repair operations in their own country. There are only a few cleaning stations in Belgium for chemical companies, therefore some cleanings are already performed in Antwerp.

It appears to be a clear bottleneck in terms of cleaning when considering the demand and supply sides in Antwerp. Several chemical companies have to cross the border to clean their wagons. It becomes:

- **A waste of time:** as the time spent to reach the cleaning facility already lasts way too long. Besides, the time wasted does not only come from the distance until the cleaning or repair facility but also from the time during which wagons have to 'wait'¹¹ before they are treated in these facilities.
- **A waste of money:** as the whole time spent away from the site for wagons means that they can not be used. Besides, going further obviously has a direct impact on transport costs.

Chemical companies end up sending their wagons in France, Germany so that they can be cleaned and/or repaired. Some Belgian chemical companies coming from the South of the country must also send their wagons to Antwerp so that they can be cleaned there. This can be considered as a 'time waste' for them as well which would be much more interested by the set up of cleaning and repair installations in the Southern part of Belgium.

Another solution chosen by some companies is to call a cleaning/repair mobile team on site because they actually don't have any other alternatives. Again, the impact in terms of costs can be important for chemical companies. These costs would not be any more necessary if there were enough cleaning/repair capacities within Belgium.

Finally, considering the time currently required, it seems clear that chemical companies would be willing to use new cleaning & repair facilities in Belgium. They also consider that the setup of these new facilities should be managed by a **neutral party**. This neutral party should therefore be transparent in its services supply & in its prices.

¹¹ Wagons are sometimes staying between 1-2 months on site before they are cleaned or repaired.

4. Products covered within the scope of the feedback of the Belgian chemical industry

To consider the repartition of RID classes & products targeted for these wagon cleanings, we based ourselves on 2 different data :

- 1) Historical data from our companies with a percentage RID class repartition estimated
- 2) The data received from the companies which answered to the questionnaires

According to historical data, Most of the products transported by rail by the chemical industry are distributed in the following RID classes (with estimated percentage for each class) :

- 2 : Gases (Butane, propane, ...) : approx. 5%
- 3 : Flammable liquids (benzine, fuel, gazoline) : 10-15%
- 6.1 : Toxic substances (strychnine, nicotine) : 2-4%
- 8 : Corrosive substances (sulphuric acids) : 15-20%
- 9 : Miscellaneous dangerous substances and articles : 5-10%
- Not RID : 40-50%

5. Feedback from the chemical Industry on cleaning requirements in Belgium

Overview

First of all, we would like to begin this analysis of the feedback from the Belgian chemical industry by pointing out the fact that the answers to the questionnaires come from very different type of companies all active in the chemical sector. Indeed, we have received on the one hand input from chemical companies but on the other hand from tank storage companies as well. Most of these tank storage companies don't manage cleaning or repair operations considering that they are only storing companies. Still, their activity is strongly anchored in the Port of Antwerp and is an important part of the Belgian chemical landscape. Therefore, we interpreted the input received from these 2 types of companies separately.

Cleaning

Wagon cleaning needs

In order to assess the amount required of cleaning for wagons for chemical companies in Belgium¹², we based our analysis on the information collected from the companies which answered to the questionnaire. We then estimated the coverage of these companies on the petrochemical market based on their turnover compared to the turnover of petrochemicals since most of these companies

¹² Most of the companies which answered come from the petrochemical business (NACE 20.14)

are active in this NACE subsector¹³: 20.14. The degree of coverage of the Belgian petrochemical market was 65%. Then by using a simple rule of 3, we assessed the amount of cleaning operations required for Belgium for the chemical industries. Eventually, we applied a margin of error to the amounts calculated as our questionnaire was sent to companies of a certain size which are using rail freight transport in their modal split. This may not be the case for SME's. This is why we insist on the fact that it is an estimation and not a directly collected number.

Based on the feedback of the chemical companies from Belgium, it seems clear that the current available cleaning facilities for rail tank wagons (hereafter : wagons) are a big bottleneck for the chemical industry : the estimated amount of cleaning performed in Belgium is much lower than the estimated amount of cleaning required for chemical companies in Belgium. The estimated amount wagon cleanings already cleaned directly by companies in Belgium reaches 100 to 110 wagons cleanings whereas we estimated the amount of wagon cleanings required reached to at least 350 to 400 wagon cleanings per year. This means that the actual wagon cleaning facilities in Belgium would only cover approximately one third of the needs of the chemical industry.

We also received results from companies active in both the refining & chemical business. It was not especially easy to split chemical & refining activities for these companies but the trend coming from these companies is clear as well : they have to send at least 150-200 wagons abroad in order to clean them because there aren't enough cleaning capacities in Belgium.

Considering the refining & chemical business together, we speak of more than 500 to 600 wagons to be cleaned in Belgium which for most of them have to be sent abroad.

It is important to insist on the fact that the numbers estimated are only based on the amount of cleaning operations already performed & managed directly by the companies themselves and by the amount of wagons rented to wagon owners companies for which cleaning are required. We unfortunately did not receive any quantified data from wagon owners companies. It seems that wagon owner companies dispose of a lot of information which would be very relevant to confirm the potential of wagon cleaning requirements within the Belgian chemical landscape.

The types of wagons, we mention here, are mostly chemical wagons. There aren't as many needs for gas wagons than for chemicals considering the high degree of integration & connection of Belgian chemical companies. The requirements related to petroleum wagons are more related to the oil & refining business which has a direct & strong connection with chemicals but still covers different NACE activities¹⁴. Unfortunately, we lack sufficient answers from the chemical companies to be able to give a real distribution of these types of wagon cleaning requirements.

The fact that there exist current bottlenecks in terms of wagon cleanings in Belgium is confirmed by tank storage companies. There exist currently not enough cleaning facilities in Belgium (only 3)¹⁵ confirming the fact that chemical companies have to go abroad to perform their cleaning operations.

We received data from a representative cleaning facility in Belgium and they seem to confirm the estimated amount of cleaning operations already performed for rail tank cars within Belgium (and

¹³ This NACE subsector qualification is based on official sources from the Belgian Economic authorities.

¹⁴ Refinery is NACE 19 & Chemistry is NACE 20.

¹⁵ See report 6.1 'Analysis of the market demand for cleaning in the Antwerp Chemical cluster for wagons, trucks and containers' from Philip Van Den Broeck from Trafuco (WP6, Less than a Wagon Load).

mostly within the Antwerp cluster). This again would confirm that the current cleaning facilities in Belgium do not provide enough capacities to satisfy the needs of the chemical companies.

Tank containers cleaning needs

In order to assess what the needs in terms of tank containers cleaning, we used the same method as for rail tank cars. There were less chemical companies using tank containers than rail tank cars but the amount used is much bigger considering its intermodal utility. Indeed, the amount of tank containers requirements estimated thanks to the answers of the Belgian chemical companies reaches approximately a minimum of 20.000 tank containers over a year.

Again here, it seems clear that some of the companies interviewed must clean their tank containers abroad.

Unfortunately, tank storage companies don't have a clear view on the cleaning needs for tank containers as the cleaning operations are managed by wagon owners companies.

Cleaning techniques requirements

The requirements in terms of cleaning techniques depend on the companies & their products. We did not receive quantified answers for the several cleaning techniques required for the wagons or containers. Still on a qualitative basis, we can affirm that:

- Steam was the cleaning technique the most indicated
- Flaring was mentioned by several companies as necessary: not always on a regular basis for all of them.
- Nitrogen was mentioned by a minority of companies as well.
- Sand was probably the cleaning technique the less suggested, compared to the others. Still mentioned by some companies as well.

If we try to compare these results with the answers of the wagon owners companies, we can see that all the above mentioned techniques were suggested by wagon owners as well without having quantified numbers.

Preliminary conclusion on cleaning

The conclusion related to cleaning requirements in Belgium is obvious: companies must often¹⁶ clean their assets abroad or ask cleaning teams to come on site to clean their assets. The only exception is that tank containers represent a much higher amount of cleaning requirements. This might also be due to the fact that the rail business suffers nowadays from a competitive disadvantage compared to other means of transport in Belgium.

¹⁶ Depending on RTC's or Tank Containers

Empty requirements for cleaning & quality of the product

The requirements for empty wagons depend on the companies answers. Several companies did not answer to this question but it appears clearly that wagons have to be cleaned mainly for several reasons:

- 1) For RID legal aspects : the binding legislation forces companies to clean their RID wagons each definite amount of time¹⁷.
- 2) For product changes: if the wagon contained a certain product, it has to be properly cleaned before containing another product. It is not only essential from a safety point of view but it becomes mandatory from a quality point of view. Should the tank not be cleaned properly, the quality of the product may become not good enough.
- 3) For repair reasons: Sometimes wagons or tank containers need to be slightly repaired and are therefore cleaned in order to avoid to send them twice abroad.

¹⁷ See report 6.1 'Analysis of the market demand for cleaning in the Antwerp Chemical cluster for wagons, trucks and containers' from Philip Van Den Broeck from Trafuco (WP6, Less than a Wagon Load) : RID Tank : 'Recipients and their equipment need to have their periodical examination after 8 years at the latest. Every 4 years after the first and every periodical examination an intermediary revision is issued.

Exceptions:

- Strongly cooled liquid gasses need to have their first periodical examination after 8 years and afterwards every 12 years. The intermediate examinations need to be done every 6 years after a periodical.
- Depended on specific products other exceptions can occur. These can be found in the numerological list of the RID.'

For every periodical and intermediary revision the tanks need to be cleaned examinations need to be done by organizations acknowledged by the European governments.

- Non-RID tank
The amount of non-RID tanks is very low. For these tanks the revisions are usually decided upon by the ECM (Entity in Charge of Maintenance). Normally the tanks are revised every 4 years.

6. Feedback from the chemical Industry on repair requirements in Belgium

The overall conclusion for repair is that companies always want to couple it with cleaning operations in order to avoid to send their wagons or tank containers twice. For the rest, repair operations are, based on the answers of the companies, mostly managed by wagon owners companies and chemical companies don't have a view on the exact requirements.

Still, based on the feedback received, we can conclude that a minimum of 700 to 800 repair operations for wagons should take place in Belgium whereas most of these repair operations currently must be done on site (if talking about small repairs) or abroad. Some of the repair operations already happen in Antwerp but it seems to be a small part of the required repair operations.

The feedback related to tank containers repair requirement was unfortunately not broad enough to deliver a quantified conclusion.

As a conclusion for repair, it was overall more complicated to have a view on the current requirements for Belgian chemical companies as they often take care of the small repair operations on site and send some of their wagons abroad in case these need greater review.

Nevertheless, the conclusion was also that by setting up cleaning facilities coupled with repair facilities in a unique location would be essential & much easier for chemical companies in Belgium.

7. Additional remarks :

Need to couple cleaning & repair to an RID Buffer zone

It was already several times underlined in this report that chemical companies are willing to couple repair & cleaning operations in order to avoid to send their wagons or tank containers twice for revision. This claim can even be extended to the setup of a real RID buffer zone: indeed companies have clearly stated the need to add this service to the other ones proposed & investigated within this report. The Belgian chemical industry has been asking for a long time to setup real 'cluster zones' where all these value added services for rail would be available at the same location point.

The setup of such cluster zones would be a real time & game changer for the rail for the Belgian chemical industry in terms of safety, quality of the services & efficiency.

Main HUB location

The opinion of the companies for the actual location of the main HUB depend obviously on their geographical position in Belgium. Considering that the majority of the companies which gave feedback on this topic are located in Antwerp, their feedback on the location of the Main HUB was positive.

If you look, on the other hand, at the feedback of companies located outside of the Antwerp chemical cluster, some companies would be interested to see such a HUB developed in other parts of Flanders such as near Gent. Chemical companies coming from the south of the country are not interested by

the setup of cluster zones for rail in the Flemish region as it would still represent a great time loss & great costs for transport matters for them, they would welcome such cluster zones for rail close to their industrial cluster in the Southern part of the country.

Contract commitments & basis

The answers from chemical companies related to current long term contracts weren't numerous. Based on their restricted feedback, they are not committed to long term contracts and could shift to other proposals as long as the cleaning facilities satisfy the certificates needed to perform their operations. Here are some certificates pointed out by the companies:

- ECD
- Environmental permits

As for the contractual basis which should be developed with the cleaning facilities, the answers coming from chemical companies are split in 3:

- Ad Hoc: depending on their needs & their activities
- Contractual basis: the companies willing to work on a contractual basis usually would define their needs by the beginning of the year on a regular basis & would therefore communicate their needs to the cleaning facilities
- Managed by wagon owners: no decision.

Finally the time slots targeted to perform cleaning operations also depended on the companies, half of them was in favour of a non-stop availability (7 days per week) whereas the other half was in favour of weekly days.

Again the amount of answers could not lead to general conclusions for the whole Belgian chemical sector related to this topic.

Lineas' s solution & current alternatives

The answers from the chemical companies related to Lineas' s¹⁸ were mitigated. Indeed, not all companies expressed their interest for this solution & some of the answers came from tank storage companies which could only express their opinion as service provider and not as customers.

If we look at the answers from the chemical companies only : the average feeling for this proposal is negative : the interest expressed was, on average, very low or this solution was considered by some as not relevant. Still, we also received feedback from the chemical companies on the current alternatives used nowadays. Trucks & containers are the solutions most often used whereas some companies only use RTC's which means that they don't have any other alternatives for the moment.

Should these companies be willing to use an intermodal solution, Lineas' s proposal might become an opportunity. The answers from tank storage companies were less reliable as they pointed out the fact that it could be interesting for their customers for example for bulk although they would not directly by the customers of such a service.

¹⁸ The development of a pallet solution (palletised goods could be big bags, ISO containers, ...) : the goods could be easily transferred on a train thanks to an automated load/unload platform (Source : Lineas).

8. Conclusion

To conclude this report, we would like to summarize our findings covering the feedback of the Belgian chemical industry on the potential set up of value added services (cleaning & repair) for rail freight transport.

By collecting the feedback from the chemical industry, we realized at first that Belgian chemical companies were facing several bottlenecks in terms of repair & cleaning operations for both RTC's and tank containers. Due to the insufficient existing facilities in Belgium, several companies had to send their fleet abroad or ask to mobile repair/cleaning teams to come on site. These 2 practices represent great time & money losses for these companies.

We then focused our analysis on the quantified needs of the Belgian chemical industry based on the answers collected from the chemical companies. We explained the methodology used & raised the fact that the results & calculation within this report had to be seen as estimates based on the data delivered from the companies. Another important conclusion of the study was that many chemical companies weren't actually the ones managing their own cleaning & repair contracts but that these were managed directly by wagon owners companies as many chemical did not own their own RTC's or tank containers.

The outcome of the analysis is clear : Belgian chemical companies face insufficient cleaning & repair facilities mostly for RTC's in Belgium. Some of the tank containers must be cleaned abroad as well. Approximately one third of the amount of cleaning required for RTC's are being currently performed in Belgium. Besides, we explained the different cleaning techniques required and the reasons for which cleaning had to be performed.

The conclusion is positive for repair operations as well even though it is more difficult to assess the needs of the Belgian chemical industry as wagons owners are almost always the parties managing the operations. Furthermore, repair operations are sometimes executed on site when of small order and must sometimes be executed abroad.

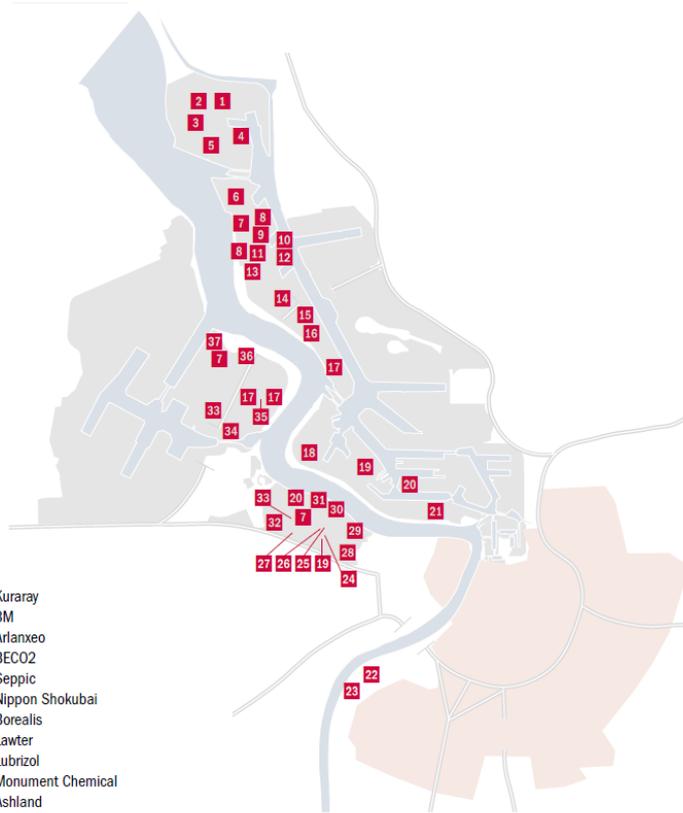
The overall conclusion for repair and cleaning operations is clearly that these 2 operations must be coupled on the same site so that chemical companies avoid losing time by sending their wagons or tank containers twice. An RID parking was also considered as part of the scope of such site for chemical companies even though this report is supposed to cover only cleaning & repair requirements.

ANNEX

Annex A : Map of the chemical cluster of Antwerp

COMPANIES OPERATING IN THE OIL AND CHEMICAL SECTOR

- | | |
|----|---|
| 1 | BASF |
| 2 | BASF DOW HPPO |
| 3 | Ineos-Styrolution |
| 4 | Eurochem |
| 5 | Air Liquide |
| 6 | Gunvor Petroleum Antwerp |
| 7 | Ineos |
| 8 | Solvay |
| 9 | Inovyn |
| 10 | Henkel |
| 11 | Ferro |
| 12 | Monsanto |
| 13 | Eastman |
| 14 | Evonik Degussa |
| 15 | FRX Polymers |
| 16 | Covestro |
| 17 | Lanxess |
| 18 | Total (Refinery) |
| 19 | ExxonMobil
(Refinery + Petrochemicals) |
| 20 | ATPC |
| 21 | Total Polymers |
| 22 | Kuwait Petroleum (Q8) |
| 23 | BP Lubricants |
| 24 | DOW |
| 25 | Momentive |
| 26 | Praxair |
| 27 | Kuraray |
| 28 | 3M |
| 29 | Arlanxco |
| 30 | BECO2 |
| 31 | Seppic |
| 32 | Nippon Shokubai |
| 33 | Borealis |
| 34 | Lawter |
| 35 | Lubrizol |
| 36 | Monument Chemical |
| 37 | Ashland |



Annex B : Questionnaire

Goal of the meetings with the chemical industry

Cover the market in order to assess what are the needs and the requirements of chemical companies related to value added services such as repair, cleaning services for wagons, containers being used in the rail services :

- What are the current needs in terms of cleaning operations for chemical companies (# operations) ?
- For what type of products ?
- What are the current needs in terms of repair operations for chemical companies (# operations) ?

Proposed companies for the interviews

ITC Rubis, Exxon Mobil, BP, Total, BASF, Ineos, Borealis, Evonik, Chevron, Lanxess, Celanese (associated member), Sabic, DSM, Sumitomo, Solvay, ACP, Air Liquide, Oleon, Taminco, Vopak, Yara, Dow, Proviron, Tessenderlo (not member)

The idea is to reach companies coming not only from the Port of Antwerp but also from other regions such as East Flanders, Wallonia, ...

Questions :

Cleaning :

- Does your company, as a shipper, has direct contact with the cleaning companies ? In other words, are you the one giving cleaning orders to the cleaning companies ?

If NO : Can you estimate your cleaning needs based on your current rail activities/business ? :

- How many wagons do you rent to wagon owners ?
- What type of wagons (based on which we could estimate the revision periods : gas wagons or not, others) ? For what type of products (ADR class) ?
- Do you have cleaning requirements in terms of empty wagons ? In other words, how many empty wagons/year do you receive which require a cleaning operation ?
- **For Tank containers / trailers :** Can you give a rough estimate of the amount of ECD's received/year ? How many cleaning do you already perform in the Antwerp region ?

If YES :

- For the following categories of products : How many cleaning operations would be needed in the Antwerp region ?

Wagon cleaning

Type of product	# cleaning operations
Petroleum wagons	
Chemical wagons	
Gas wagons	

- For rail cars, how many cleaning operations are already done in the Antwerp region ? How many would be required to be beneficial for your company in the Antwerp region ?

ISO Tank cleaning

Type of product	# cleaning operations
Light	
Medium	
Heavy (chemicals)	
Difficult (gasses, solvents)	

- For containers, how many cleaning operations are already done in the Antwerp region ? How many would be required to be beneficial for your company in the Antwerp region ?
- What would be the different techniques required for these cleaning operations?
 - Steam
 - Sand
 - Flaring
 - Other
- Do you need flaring as a cleaning technique for your company ? If yes, can you indicate how many flaring operations you would potentially require over a year ?
- What are the certificates required to perform these cleaning operations (depending on the targeted products)?
- For the cleaning already performed, how likely would a shift to Antwerp be assuming a suitable offer is available?

1	2	3	4	5	6	7	8	9	10
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 - According to you what are/would be the advantages of performing these cleaning operations in Antwerp ?
 - If not willing to shift to Antwerp, why?
- What would be the time needed between decision and effective shift of operations to Antwerp? In other words, are you currently committed to a long term contract that could not be given notice to?

- What kind of collaboration would you like to develop if these cleaning operations could be performed in Antwerp :
 - Ad hoc
 - On a contract basis
 - Other

- What would be the kind of goods targeted?
 - Dry bulk
 - Container/tanktainer
 - Tank wagon

- What would be the ideal time schedules to perform these operations?
 - 24/7
 - Weekly days

- What are the current existing bottlenecks/problems encountered nowadays by your company in cleaning operations ? How could they be solved in the future?

Repair :

- Does your company, as a shipper, deal/manage contracts directly with the repair companies ? In other words, are you the one giving repair orders to the repair companies ?

If YES :

- How many repair operations do you foresee over a year ?

- What would be the frequency of these repair operations?

- According to you, what are/would be the advantages of performing these repair operations in Antwerp ?

Transport

- One of the goals of the 'Less than a wagon load' project is to develop a pallet solution (palletised goods could be big bags, ISO containers, ...) : these could be easily transferred on a train thanks to an automated load/unload platform, would you be interested by such a rail solution?

1	2	3	4	5	6	7	8	9	10
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- If yes, for what kind of products? For what kind of volumes (big bags, IBC, Bulk container)?
- Other required conditions?
- Is there already an existing business related to this field within your company? If yes, how do you perform it nowadays?
 - By truck
 - By container

- What do you think of the location for the Main HUB?

1	2	3	4	5	6	7	8	9	10
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- If it could be developed in other regions, where would you like to see it?
 - Gent
 - Wallonia
 - Other

- Please define the concept of open/neutral access to the main HUB

Annex C : List of the companies interviewed

- BASF Antwerpen
- Evonik Antwerpen
- Borealis
- Innovyn
- ITC Rubis
- Oil Tanking
- Proviron
- BP
- Total
- Vynova
- Covestro
- Ashland
- Exxon Mobil
- ADPO
- Arlanxeo
- Yara
- Air Liquide
- Kronos
- Dow Corning
- Eastman