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Gas Composition Transition Agency Report 2013

The status of the transition to high-calorific-value gas

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1. Introduction

Current sources of natural gas are sufficient to supply the Netherlands for another decade. However, we are approaching a horizon beyond which there will not be enough natural gas locally available to meet current demand, and we will need to find additional sources. To ensure a sufficient supply of gas, we have been importing gas by pipeline from Norway since the mid-1980s. Gas from Russia has been part of the Netherland's imports for more than ten years, and Gate LNG Terminal at the Maasvlakte industrial area has been operational since September 2011.

The development of LNG terminals has opened up a global supply of natural gas for use in Northwestern Europe. The use of LNG promotes supply security and market forces. The increasing proportion of LNG in the Dutch natural gas mix is expected to result in a greater variation in the composition of gas in the future. In 2009, Gasunie Transport Services (GTS) signalled that in the near future, imported high-calorific-value gas (H-gas) might have a higher Wobbe index[1], a larger Wobbe index range, and greater amounts of the heavier hydrocarbons. This caused some concern in industry over equipment operation and possible safety risks. In 2010 and 2011, the Dutch minister of Economic Affairs (EZ) commissioned a study by KEMA, Kiwa, and Arcadis, which concluded that consumer and employee safety need not be endangered by a different natural gas composition. A number of modifications and new policies will be required, however.

The most cost-effective approach dictates that multiple players in the chain of gas supply and consumption must take responsibility for those modifications and policies. Companies that use H-gas need to adapt their systems to make them compatible with the imported gas, which is the motivation behind the initial transition period through the end of 2012.
During the transition period, no LNG with an extremely divergent composition will be imported (the propane equivalent, or PE, will not rise above 8.7). GTS will also reduce the Wobbe index of the gas in the system to a maximum of 54 MJ/Nm^3. The transition period initially ran through the end of 2012, was extended through the end of 2013, and may be extended one last time through the end of 2014. By the end of 2014 at the latest, all companies using H-gas must be ready to receive gas having a wider range of compositions.

Throughout the transition period, Gate Terminal and GTS have been taking measures to limit fluctuations in gas quality and to thoroughly inform users about this quality. Gate Terminal has been doing its best to ensure that changes in gas quality occur in small increments. The terminal has ably succeeded, possibly in part due to its low production level. GTS has implemented a per-company gas quality notification system regarding the expected composition of the gas, which many companies appreciate. Not every company has made extensive use of the system so far. In unusual situations, GTS has been looking for customised solutions.

1 The Wobbe index is an important characteristic of fuel gases. It is an indicator of the interchangeability of different gases in a given appliance. Gases with the same Wobbe index have the same combustion energy output in a given appliance. (Wikipedia)

The Gas Composition Transition Agency (staffed by NL Agency and GTS) is monitoring the transition and the effects of the fluctuating gas composition and is advising the minister of EZ. In the summer of 2011, the Dutch House of Representatives approved this "mix of measures" (parliamentary paper [kamerstuk] 29023 no. 84, 30 March 2011, letter and appendix 1).

In early 2012, the Gas Composition Transition Agency asked companies how far along they were in the required modifications to processes and equipment. Based on the information from this survey, the Agency recommended that the minister extend the transition period through the end of 2013. The minister adopted this recommendation.

In this document, the Agency makes a new recommendation to the minister regarding a second potential extension of the transition period, based on a new survey conducted in 2013 and discussions with companies in the first half of 2013.

2. High-calorific-value natural gas: the state of affairs in 2013

Domestic use

Each year in the Netherlands, roughly 15,000,000,000 m^3 of high-calorific-value gas (H-gas) is consumed by 57 different companies. These companies have a total of 88 connections to the national gas network managed by transmission system operator GTS. The companies are spread throughout the country, with a strong concentration in the Rijnmond region. The remaining H-gas users are primarily located in the IJmond region, the Delfzijl-Eemshaven region, and the provinces of Limburg and Zeeland. A few companies provide gas from their own network connections to a small number of onsite businesses.

In addition, a few dozen companies receive H-gas through two regional transmission networks. These are operated by Westland and ZEBRA (the latter through a connection in Belgium).

The applications for which end users consume H-gas can broadly be divided into the following categories:

- electricity generation and cogeneration
- industrial heating and comfort heating
- raw material for industrial production processes

H-gas users are primarily refineries and chemical companies, power stations, storage and transhipment companies, and a few companies from other industries. These companies vary greatly in size, natural gas consumption, and the complexity of their systems.

Production and import

As a result of declining production from domestic small fields in the North Sea and on the Dutch mainland, the need for new sources of natural gas is growing. Import capacity is already available and in use for natural gas piped in from Norway and Russia and for LNG transported by ship.

To date, sendout from Gate Terminal has been relatively low, as a result of the current market situation. There was a cold period during the spring of both 2012 and 2013 in which Gate Terminal supplied gas for several days at a capacity of 60 to 70 percent. In general, we can conclude the following:

- The amount of LNG in the system has been low up to this point.
    - Companies outside Rotterdam, which comprise 25 percent of the total, have received virtually no LNG.
    - For a long time, only boil-off gas was injected. This gas consists primarily of vaporized (nearly pure) methane that originates because some warmth always leaks into the tanks, through the insulation. This lightweight gas must be sent out into the gas network in order to prevent pressure building up in the tanks.
- LNG with a relatively heavy composition (PE of 7–8.7) has not been injected into the network, nor imported elsewhere in the Netherlands.
    - As a result, the fluctuations in quality measured in Rotterdam, close to the terminal, have remained smaller than theoretically

could be possible. Relative to the period before LNG began to be imported, more and larger fluctuations in quality have occurred.

- To date, Gate Terminal's experience is that the fluctuations in quality of the gas injected into the network have been smaller than could be expected based solely on the composition of the imported gas.

However, this situation is not representative of the terminal's future throughput at maximum capacity. The reason for Gate Terminal's low throughput lies in the price of gas on the European market. Demand is high in Japan, which drives up the global market price. At the same time, the price of coal in Western Europe is low, which is related to low gas prices in the US and which suppresses the production of electricity from gas. Should the market situation change, higher throughput from the LNG terminal is certainly an option. To date, only very limited experience has been gained relative to this situation.

The composition of imported LNG

In April 2013, GIIGNL (International Group of LNG Importers) published its report on 2012. The report contains information about global LNG transports. The table below shows the composition and selected characteristics of LNG from different production locations. The values for the propane equivalent (PE) have been computed after scaling the Wobbe index to 55.7 MJ/Nm^3. The PE is a measure of the concentration of hydrocarbons heavier than methane in the gas. According to this source, in 2012 the LNG imported into the Netherlands came primarily from Norway. Nearly all gases in the world have a PE lower than 8.7. The exceptions are gas from the NWS source in Australia and gas from Libya. Neither type of gas has been offered on the Western European market in the recent past.

	methane	**ethane**	**propane**		**nitrogen**		**Wobbe index**	**calorific value**	**relative density**	**PE**
	CH_4 %	C_2H_6 %	C_3H_8 %	C_{4+} %	N_2 %	CO_2 %	MJ/Nm^3	MJ/Nm^3	-	
Australia - NWS	86.26	8.23	3.29	0.96	1.26	0.00	55.70	44.76	0.65	8.84
Australia - Darwin	87.17	9.92	1.95	0.33	0.64	0.00	55.70	44.15	0.63	7.40
Algeria - Skikda	91.40	7.35	0.57	0.05	0.63	0.00	54.46	42.30	0.60	4.32
Algeria - Bethioua	89.55	8.20	1.30	0.31	0.64	0.00	54.95	43.22	0.62	5.87
Algeria - Arzew	88.91	8.42	1.59	0.37	0.71	0.00	55.28	43.48	0.62	6.36
Brunei	89.60	5.31	3.00	1.47	0.61	0.00	55.70	44.42	0.64	7.86
Egypt - Idku	95.32	3.58	0.74	0.34	0.02	0.00	54.47	41.76	0.59	3.04
Eqypt - Damietta	97.25	2.49	0.12	0.12	0.02	0.00	54.02	40.87	0.57	1.55
Equatorial Guinea	93.41	6.52	0.07	0.00	0.00	0.00	54.72	41.95	0.59	3.33
Indonesia - Arun	91.87	5.66	1.60	0.79	0.08	0.00	55.38	43.29	0.61	5.62
Indonesia - Badak	89.71	5.43	2.97	1.39	0.50	0.00	55.70	44.41	0.64	7.77
Indonesia - Tangguh	96.91	2.37	0.44	0.15	0.13	0.00	54.20	41.00	0.57	1.85
Libya	81.39	12.44	3.51	0.64	2.02	0.00	55.70	45.57	0.67	10.69
Malaysia	91.69	4.64	2.60	0.93	0.14	0.00	55.52	43.67	0.62	6.32
Nigeria	91.70	5.52	2.17	0.58	0.03	0.00	55.54	43.41	0.61	5.80
Norway	92.03	5.75	1.31	0.45	0.46	0.00	54.96	42.69	0.60	4.86
Oman	90.69	5.75	2.12	1.24	0.20	0.00	55.58	43.99	0.63	6.86
Peru	89.06	10.26	0.10	0.01	0.57	0.00	54.88	42.90	0.61	5.25
Qatar	90.90	6.43	1.66	0.74	0.27	0.00	55.56	43.43	0.61	5.99
Russia - Sakhalin	92.54	4.47	1.97	0.95	0.07	0.00	55.40	43.30	0.61	5.63
Trinidad	96.78	2.78	0.37	0.06	0.01	0.00	54.26	41.05	0.57	1.85
USA - Alaska	99.70	0.09	0.03	0.01	0.17	0.00	53.48	39.91	0.56	0.09
Yemen	93.16	5.93	0.77	0.12	0.02	0.00	54.80	42.29	0.60	3.92

Table 1: Known gas compositions at several LNG production locations

The figure below shows the PE for the LNG that enters the H-gas network from Gate Terminal.

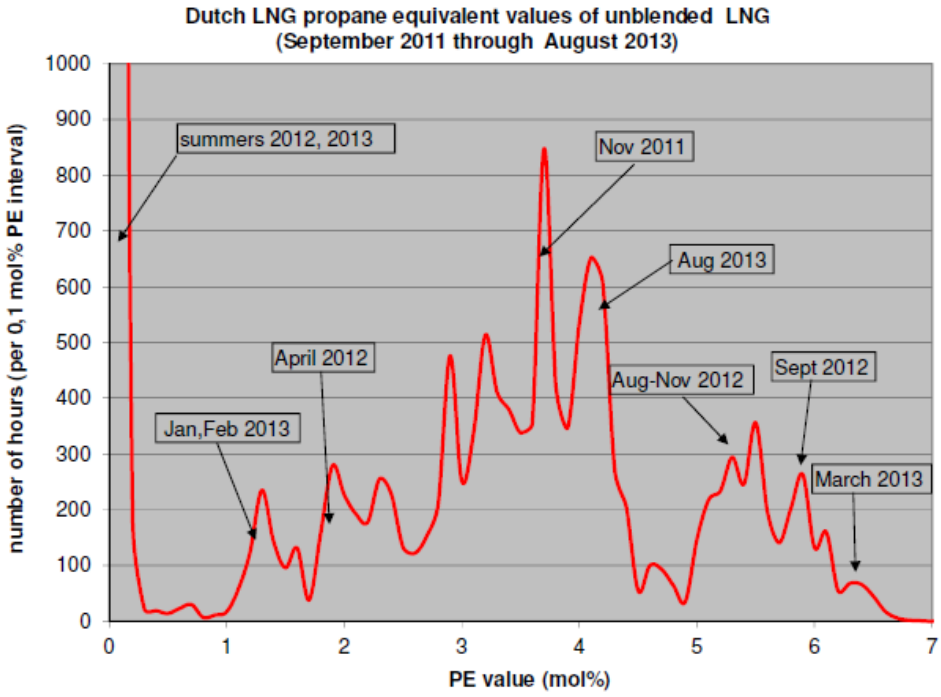

Figure 1: The number of hours each PE occurred in LNG from Gate Terminal

Natural gas is a mixture of several different gases. The characteristics of natural gas depend on its composition. The Dutch natural gas network is fed from multiple sources. These sources supply different amounts of gas having different compositions. This means that the degree to which gas from a specific source is present in the network depends on that source's production and on the amount of gas used by different companies along the route.

Depending on the sources' production levels and gas consumption by companies near the point of injection, a gas quality wavefront ripples through the system and routinely passes companies' offtake points. Where precisely the boundary lies depends on supply and demand at that moment, and is thus too dynamic to predict reliably. Particularly when the gas composition varies dramatically, a moving quality transition can have consequences for the companies that are hooked up near that location.

A company that uses gas and is close to an injection point will experience the change in the gas's characteristics as an abrupt jump. A company located further from the injection point will experience the change as more of a gradual transition.

These fluctuations are inherent to our gas system, and they also occurred in the past. Since Gate Terminal's start-up, the fluctuations have become more frequent and more pronounced. Thanks to Gate Terminal's limited throughput to date and the "friendly" composition and minimal capacity of the boil-off gas and the imported LNG, these fluctuations have not yet caused any serious disruptions.

The consecutive qualities of the natural gas from Gate Terminal has also experienced very few large jumps, as the following figure shows.

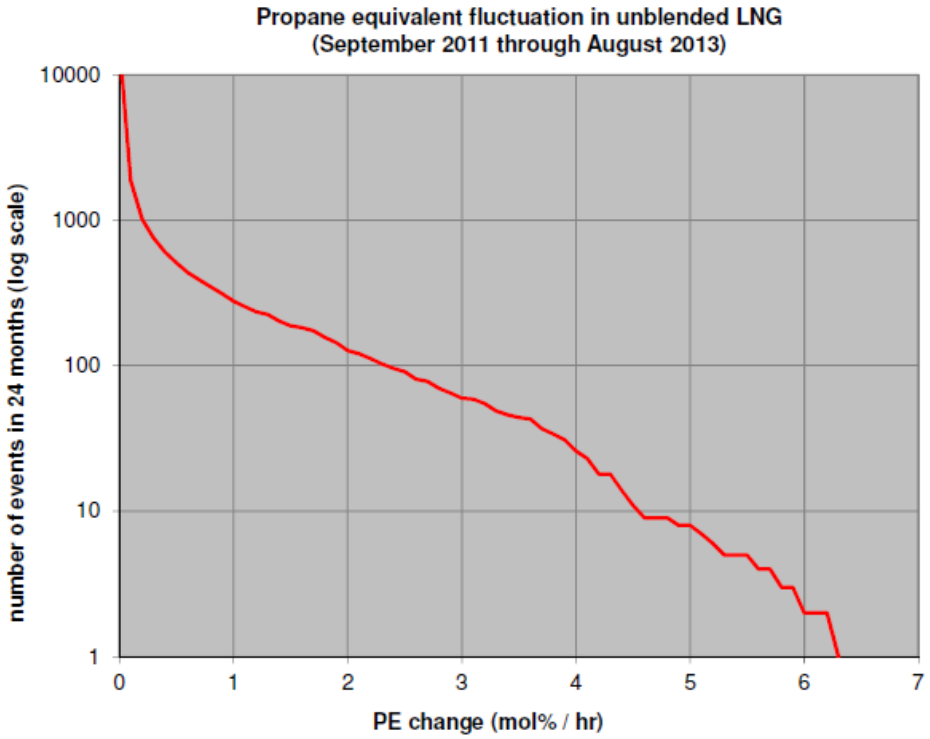

Figure 2: The number of occurrences of a given change in PE over a 19-month period

The figure shows the number of changes in PE that were measured, on a logarithmic scale. For example, a change of at least 2 PE points (positive or negative) occurred 100 times during these thirteen thousand hours, and a change of more than 4.4 points occurred 10 times. The highest hourly change, which occurred only once, was 6.3. The displayed "changes per hour" can generally be viewed as abrupt fluctuations.

Earlier calculations showed that changes in CO_2 and NOx emissions resulting from fluctuations in gas quality are small. The effect on NOx emissions will be almost too small to measure, and falls within the error of margin for determining national emissions. CO_2 emissions might decrease marginally, since the imported gas does not contain CO_2. More information on this is available at www.projectbureaunieuwaardgas.nl .

4. The status of the transition to H-gas as of 2013

The results of the 2012 survey
In June 2012, the Gas Composition Transition Agency reported the following figures:

- 31 of the 58 companies will be ready for the new gas composition at the end of 2012.
- 23 of the 58 companies will not have completed the required modifications to their systems by the end of 2012.

Based on these findings, the Agency recommended that the minister extend the transition period for a year, through the end of 2013. The minister adopted this advice.

The results of the 2013 survey
To gain a clear picture of companies' progress in adapting their systems, we sent a survey in February 2013 to companies with one or more connections to GTS's H-gas network. There are now a total of 57 companies on the H-gas network, with a total of 88 H-gas connections.

Fifteen companies that had indicated they were ready in 2012 and that did not respond to the 2013 survey were sent a letter to confirm that they would be included in the 2013 results as having completed the changes necessary for the new natural gas composition.

2013 Survey	**Number of companies**
H-gas companies	57
Companies ready by end of 2013	41
Companies not ready by end of 2013	12
No response	4

Table 2: Number of companies and transition status

Four companies did not respond to repeated e-mails and phone calls.

In the responses, twelve companies state that they cannot complete the required modifications by the end of 2013. Of these twelve:

- eight companies have indicated that they will not be ready in 2013 and that converting to the new composition may present a safety risk; and
- four companies have indicated that they can make procedural changes that will allow them to continue operations if the new composition goes into effect at the end of 2013. An example of a procedural measure is lowering production in order to keep the quality of the product within specifications.

The companies that will not be ready in 2013 provided explanatory reasons as shown below.

2013 Survey	**Number of companies**
Not ready by end of 2013	12
Reasons*	
Expected problems with gas turbines	6
Modification of dozens of comfort-heating systems	2
Regular review planned in 2014	2
Currently working on system / process	3
In discussion with suppliers and design departments	6

Tabel 3: Number of companies not ready and issues

*For a few companies, multiple factors play a role, or the company has multiple sites.

Two companies have indicated that they have planned a regular review or maintenance period in 2014, and that they expect to realise the required changes at that time. One of the twelve companies claims that planned maintenance on the gas turbines cannot take place before 2015 as the result of financial considerations.

Six of the twelve are still in discussion with suppliers and design departments regarding the modifications to be realised. The lack of a definitive specification for the expected gas composition is a stumbling block, which is presented as part of the reason for the delay. This subject has been an issue for some time. Companies should be able to use the known composition of imports in Western Europe over the last few years to determine their own design specifications, on which suppliers will subsequently base their warranties. The less risk companies are willing to take, the more expensive and complicated the modifications may be.

Recent experiences with fluctuations in gas composition

Fourteen companies have indicated that they have experienced repeated problems with fluctuations in the composition of the gas. A gas turbine on the Maasvlakte that is exposed to maximum fluctuation (because the Wobbe index of the LNG has not yet been corrected at that point) sometimes experiences sudden stoppage, with all the associated consequences (such as production loss).
Two companies experienced specific problems with their systems on two or three occasions in April 2012, due to large fluctuations in the caloric value of the natural gas.

Manufacturers of industrial gases are experiencing problems with their products' specifications. They are compensating for this by operating at less than full capacity, so that more degrees of freedom remain available to achieve the desired product quality. At the point when the market picks up, this reduced production capacity will lead to a loss of revenue.

Why is the conversion process going so slowly?
The companies indicate that there are two important reasons why the modification process is moving slowly: the lack of definitive specifications for the natural gas, and the so far meagre quantity of LNG being pumped into the H-gas network by Gate Terminal.

Both reasons make it difficult to design system modifications. Regarding the composition of the gas, companies will have to select their own strategies based on the available information. Unfortunately, technology suppliers are reluctant to provide warranties on the equipment without definitive specifications.

The current minimal import of LNG is attributable to the market situation. The speed of fluctuations in quality throughout the system also plays a major role. The changes in quality have turned out to be larger than previously experienced.

The GC-link notification system and other sources of information
The companies provide diverse reports about the use of information sources. The most widely used source is GTS's GC-link, which provides information on the current composition of the natural gas the company can expect to receive and the travel time to their specific location. Gate Terminal's Maasmond forecast, communicated via GTS, is important for companies that connect to the network upstream of the GTS mixing station. Companies also indicate that they use the website www.projectbureaunieuwaardgas.nl to find information about gas quality.

GTS's gas cards and the information on the amounts of stored and injected gas listed on Gate Terminal's website are occasionally consulted as a source of background information.
Many companies feel that GC-link will be the most important source of information in the future; some companies additionally list Gasport, GTS's customer information system.

The June 2012 workshop on H-gas technical issues
In June 2012, the Gas Composition Transition Agency organised a workshop on the potential fluctuations in composition in the future H-gas network. Several presentations were given during the workshop, by end users, GTS, Gate Terminal, and gas turbine manufacturers.

Several companies were able to find solutions to a number of technical stumbling blocks by working with GTS, often in connection with the notification system.

The presentations from the turbine vendors showed that it is technically possible to adapt gas turbines for use with a wider range of gas compositions. There is, however, a trade-off between efficiency and the range of variation in composition over which the equipment can operate. The owner must decide what the best setup is for their situation. Regarding the speed of fluctuations in quality, manufacturers generally specify limits within which they guarantee correct operation. A more detailed warranty specification will have to be considered as custom work on a company-by-company basis; this is something each end user must discuss with the manufacturer individually. A report on this workshop is available in Dutch on the Gas Composition Transition Agency website. See

www.projectbureaunieuwaardgas.nl (H-gas – Publicaties – Verslag workshop Hoog calorisch gas_juni 2012.pdf).

Raising the maximum Wobbe index in the gas network
In addition to the gas composition transition period, the Netherlands is also implementing an increase in the maximum Wobbe index on the network. To promote effective access to international gas transmission networks, the government is increasing the maximum Wobbe index for H-gas from 54 to 55.7 MJ/Nm^3. A maximum WI of 55.7 MJ/Nm^3 or higher has already been incorporated into many contracts between companies and GTS. A number of companies' contracts with GTS still use the old maximum Wobbe index of 54 MJ/Nm^3, however, delaying the effective introduction of this increase.

Since 2010, GTS has been working with these companies to change the contracts and use the higher WI as of 1 October 2014. This proposal was definitively adopted in the fall of 2011.

The companies in question must adapt their systems to use this higher network standard. Companies must also modify their gas systems to accept LNG. The two projects (raising the maximum Wobbe index and converting to the new gas composition) are running concurrently. A number of companies have indicated they would like to perform all modifications at the same time, and thus they would like the Wobbe index increase and the transition to the new gas composition to occur in conjunction.

The future
The survey reveals that some companies are having difficulty accepting that greater market freedom means the composition of imported natural gas will vary more in the future than it did in the past. There is no question that greater fluctuations in gas quality negatively affect operations for several companies.

Since the Netherlands began importing LNG, GTS and Gate Terminal have taken several measures to reduce the potential negative effects arising from the new gas composition. These measures are listed in appendix 1.

Refusing imported LNG with a PE greater than 8.7 theoretically hampers the Dutch market. This policy should not remain in force any longer than necessary. The remaining system policies are of a technical nature and dictate a certain degree of effort and expense.

5. Recommendations for the transition period

The basis underlying H-gas transition policy
Policy with regard to the changing H-gas composition is stated in the letter to the Dutch parliament [kamerbrief] titled *Gassamenstelling* (29023 no. 84) dated 30 March 2011. A central aspect of this policy is that no additional risks may arise that threaten the safety of citizens and employees. At the same time, delivery and supply security in the Netherlands must be sufficiently safeguarded. The transition period serves to provide companies with the opportunity to adapt to the new situation and to continue to operate safely. The Gas Composition Transition Agency was founded to provide companies with guidance during the transition period and to inform and advise the minister of EZ on this process.

Considerations
The results of the survey and conversations with several companies provide a snapshot of the current situation. The Gas Composition Transition Agency has taken the following points into consideration:

1. Twelve companies are not yet (fully) ready to convert to the new H-gas.
2. Some of the reasons for not being ready in 2013 are attributable to the companies' own behaviour. Companies were first informed by GTS in 2009 about the upcoming changes to the composition of H-gas. After a research and discussion period, the Dutch House of Representatives was informed of EZ's policy through a parliamentary letter in mid-2011. Some companies have waited quite a long time before taking appropriate action because they were trying to acquire greater clarity and, preferably, a guarantee regarding the future composition of the natural gas. Companies must provide their suppliers with a specification in order to receive a warranty for proper operation. Ultimately, companies have determined their own strategies and taken action to resolve this.
   There are also companies that wish to combine the modifications for the new natural gas composition with the modifications required by the increase to the maximum Wobbe index. The Wobbe index increase will go into effect on 1 October 2014.
3. Some of the companies that are not yet prepared are located far from the terminal. The large distance and travel time will smooth out fluctuations in quality to such a degree that acute problems need not arise. In addition, there is often sufficient time to react to a warning from the GC-link notification system. But a remote location does not eliminate the need for modifications. Based on the travel time, these modifications may be smaller and of more limited scope.
4. When the transition period ends, Gate Terminal customers are also free to import the heavier LNG available on the market. It is uncertain whether in 2014 LNG with a PE above 8.7 will actually be imported. Most LNG has a lower PE, and moreover, the operational sources of "heavy" LNG are located in the Far East, close to the attractive Japanese market, or are currently closed (Libya).
5. A number of companies are currently implementing measures to accommodate the higher Wobbe index limit that goes into effect on 1 October 2014. This process is running concurrently with the transition to the new natural gas composition. Some companies have expressed a

desire for alignment between these two processes. It would be wise to take this into account.

6. In the current market situation, the import of LNG is limited. Given the market situation, it is probable that ending the transition period will have no effect on the quantity and composition of the LNG that will be imported in 2014. Under this assumption, the transition period could be ended. To nonetheless limit potential risks, Gate Terminal and GTS could be asked to keep their tank management and GC-link features operational. This will make it clear to companies that they need to step up their modification processes, will imports and the market not further be hampered, and will limit the likelihood of large fluctuations.

The Gas Composition Transition Agency's advice

The considerations described above argue for extending the transition period on one hand, and ending it on the other. It is evident that the lion's share of companies have completed their modifications and are prepared for the future. A small number of them are not yet ready. In its deliberations, the Gas Composition Transition Agency places primary emphasis on the safety of citizens and employees.

A number of companies have indicated that they would like to combine the Wobbe index increase with the transition to the new natural gas composition.

In light of this, the Gas Composition Transition Agency recommends the transition period be extended to 1 October 2014.

Recommendations

The Gas Composition Transition Agency makes the following recommendations:

- Starting in the fall of 2013, repeatedly communicate the transition period deadline to those it affects.
- Make regular contact with companies that are not yet ready.
- Keep monitoring gas quality, and when incidents are reported, investigate whether gas quality might be a cause.
- After the transition, maintain contact with companies for a period of time to determine whether the transition has gone smoothly and safely.
- Keep the currently temporary transition features provided by Gate Terminal and GTS, namely tank management and the GC-link notification system, operational even after the transition period ends. The minister could request this of Gate Terminal and GTS.

Appendix 1: The assumptions underlying 2011 gas composition policy

Letter to Dutch parliament [kamerbrief] Gassamenstelling:29023 no. 84, 30 March 2011, letter and appendices

The minister of EZ has made a number of agreements with Gate LNG Terminal and GTS (the "mix of measures") for a transitional phase to accommodate the new gases. This period provides companies with sufficient time to modify their systems to accept a different natural gas composition in a safe and economically feasible manner.

The "mix of measures" comprises the following:

1. National gas transmission operator GTS has created a notification system named GC-link for its customers. Customers receive data on the expected composition of the gas, from which they can extract the characteristics relevant for them. As the survey reveals, many companies feel this notification is important, though it is only being used by a few companies so far.
2. During the transition period, the Wobbe index maximum has been set at 54.0 MJ/Nm^3. GTS will maintain this maximum by diluting the H-gas with nitrogen gas. (Note: The maximum Wobbe index will change to 55.7 MJ/Nm^3 on 1 October 2014, independent of the addition of imported gas.) The addition of nitrogen is working well, after a few startup problems. It meets the needs of those users who burn gas. Users who consume natural gas as a raw material to produce industrial gases, chemical fertiliser, or other products do experience some loss of return as a result of the added nitrogen. Systems cannot run optimally, and when the gas quality fluctuates, it can become very difficult to manufacture products that meet specifications.
3. Gate LNG Terminal will not permit LNG with a PE higher than 8.7 during the transition period. No limit will apply after the transition period.
4. Through tank management, Gate LNG Terminal prevents the occurrence of rapid fluctuations in gas composition to the extent possible. To date, the terminal has been able to keep fluctuations in the composition of the gas within acceptable limits while operating at low capacity. However, larger jumps in quality occur during the transition between boil-off gas and production. Only a small number of users experience these jumps, given the meagre production of LNG.
5. A transition period has been put into effect. Within the stipulated transition period, companies using H-gas will modify their processes to work with the fluctuating gas composition expected in the future. In June 2012, 23 companies reported that they could not complete the required modifications to their systems by the end of 2012. Based on this, the Gas Composition Transition Agency recommended that the minister extend the

transition period for one year, through the end of 2013. The minister accepted this recommendation.

In the event that certain central policies turn out to function well and to be useful for end users, we can investigate whether these might remain in force after the transition period.

The transition period began in September 2011 and, after a one-year extension, will run through the end of 2013. In 2013, the minister will decide whether the transition period should be extended for a second year, through the end of 2014 at the latest. The Gas Composition Transition Agency is tasked with advising the minister on this issue.