

How to...

Gas Composition tracking for connected parties

Department
GTS

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1 Introduction

In 2011 GTS has released a new gas composition information service for H-gas connected parties. This new information service consists of three building blocks:

1. A B2B web service which makes available near real time GC (gas chromatograph) data.
2. A B2B web service which makes available near real time GC data together with an estimated time of arrival.
3. A 'gas map' of the Netherlands on the GTS website with a limited number of areas which gives a clustered actual gas composition indication (bandwidth) for Wobbe-index, Propane, Methane number and Superior Calorific Value. On the 'gas map' aggregated flow information will be given.

Please note that the near real time information provided is for information purposes only. GTS is not responsible for any damage or loss resulting from access to or use of these data.

The IT specifications for the The B2B web services are available at the GTS website. Please refer to chapter 3 IT specifications.

For the 'gas map' no IT specifications will be made available as this is part of the GTS website, which is self explanatory (and includes a Help function).

2 Functional description

2.1 Near real time gas composition data

This B2B web service makes near real time GC (gas chromatograph) data available. This service is called *Operational Gas Quality*.

The components which are made available are:

Short Name	Long Name	Unit
Hs	Superior calorific value	kWh/m3(n)
Hi	Inferior calorific value	kWh/m3(n)
CO	Carbon monoxide	mol%
CO2	Carbon dioxide	mol%
d	Relative density	-
N2	Nitrogen	mol%
CH4	Methane	mol%
C2H4	Ethene	mol%
C2H6	Ethane	mol%
C3H6	Propene	mol%
C3H8	Propane	mol%
C4Plus	Component C4+	mol%
C6Plus	Component C6+	mol%
i-C4H10	i-Butane	mol%
i-C5H12	i-Pentane	mol%
n-C4H10	n-Butane	mol%
n-C5H12	n-Pentane	mol%
H2	Hydrogen	mol%
neo-C5H12	neo-Pentane	mol%
W	Wobbe	

The component values are updated every 15 minutes.

For each connected party a relationship has to be made between the connected party exit point and one or more GC's which are relevant for this connected party. Each connected party – who wants to use this information service - should contact GTS in order to:

1. define which GC's are relevant and;
2. to have GTS to configure the relation between the end user exit point and the relevant GC's.

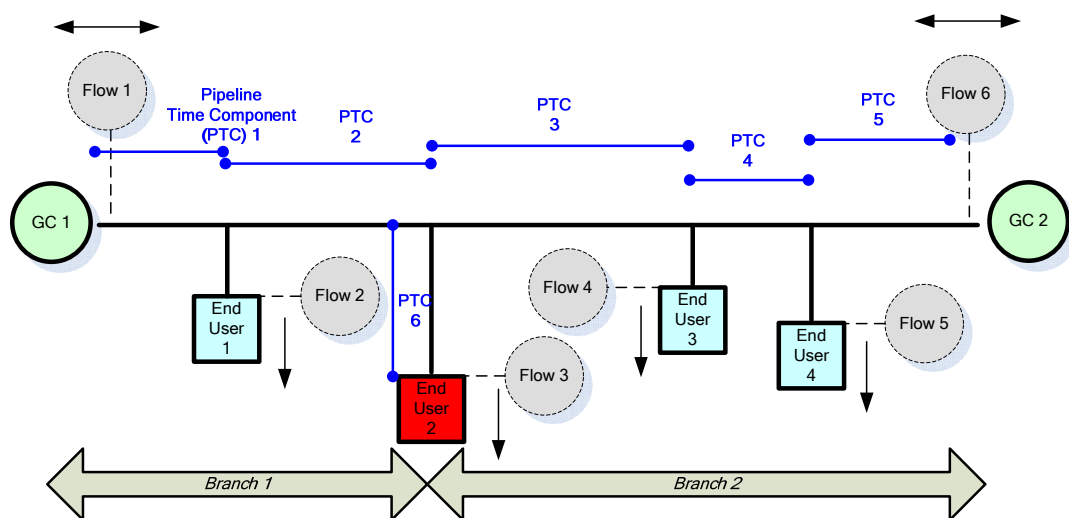
After this, the B2B web service will be able to return data for the relevant GC's to the connected party.

2.2 Near real time gas composition data with estimated time of arrival

A B2B web service is available which returns near real time GC (gas chromatograph) data with an estimated time of arrival. This service is called *Gas Components Forecast*.

The list of components is equal to the one in the previous paragraph.

For the calculation of the estimated time of arrival a model of the physical net situation surrounding the connected party is used. Below an arbitrary example of such a model can be seen (please note that a model can consist of either one or more branches):



In this example, the model is made for the information supply for End User 2 (the red box in the model)

Inputs for the calculation of are:

1. The actual flow on the entry point(s) of the modelled area.
2. The actual flow on other exit points of the modelled area.
3. The actual flow on the exit of the connected party which is informed.
4. Pipeline characteristics (length, diameter, average gas pressure).

The flows are measured every 5 minutes, the gas composition components are measured every 15 minutes.

Every 5 minutes the gas composition is given, together with an estimate in minutes of the arrival time. Approximately 15 minutes after the actual measurement of the flow, the composition and the time (in minutes) estimate should be available in the B2B service.

An example - with limited component values - of the output of the service is given below:

```
..
xx:00   Gas composition values Hs=11,6; Hi=10,3; CO2=1,2; etc.   ETA 52 minutes
xx:05   Gas composition values Hs=11,6; Hi=10,3; CO2=1,2; etc.   ETA 48 minutes
xx:10   Gas composition values Hs=11,6; Hi=10,3; CO2=1,2; etc.   ETA 53 minutes
xx:15   Gas composition values Hs=10,8; Hi=10,1; CO2=1,0; etc.   ETA 40 minutes
xx:20   Gas composition values Hs=10,8; Hi=10,1; CO2=1,0; etc.   ETA 9999991 minutes
xx:25   Gas composition values Hs=10,8; Hi=10,1; CO2=1,0; etc.   ETA 62 minutes
..
```

Please note that the estimated time of arrival will contain some impreciseness, a GC needs some analysis time and (data) processing time after taking the sample.

¹ No ETA, this composition will not reach the connected party exit point.

2.3 Gas composition map

The gas composition map is available in the public domain, the GTS website. The map is available for three components in the H-gas network of Gas Transport Services:

- ☐ Wobbe-index;
- ☐ Propane equivalent (PE);
- ☐ Methane number.

Depicted on the map are several (coloured) key areas for which an arithmetic average is given of a number of relevant quality measurements in this area. Aggregated flow information is given. The goal of the gas map is to give an overall indication of (movements of) specific gas composition values in the Netherlands.

Please note that the gas maps are only relevant for approximately 70 directly connected H-gas parties.

For customer specific information the two B2B web services should be used, which provide information directly tailored towards the end user.

The actual gas map can be found at the following location of the GTS website:

<http://www.gasunietransportservices.nl/transportinformatie/kwaliteit/h-gas-kaart-van-nederland>

3 IT specifications

For both B2B services (near real time gas composition and near real time gas composition together with estimated time of arrival) the following specs are available via the GTS website (<http://www.gasunietransportservices.nl/en/transportinformation/about-balancing/documents/connected-party>).

3.1 B2B near real time gas composition (with estimated time of arrival)

Note that the specifications are part of the overall B2B specifications for connected parties. The following documents can be found under the above mentioned link:

1. How to...
How to implement GTS Information Services - Connected Parties (pdf document).
2. XSD's
XML Schema GTS Information Services - Connected Parties (zip file)
3. WSDL
WSDL GTS Webservices - Connected Parties (zip file)
4. A specification of the B2B interface (logical description of the available data and attributes)
GTS Information Services - Connected Parties (pdf document)

4 Questions

For questions concerning the GTS information services (web services xml, Gasport and authorisation) you can contact GTS_info_exchange@gastransport.nl.

In general – using the GTS information services – the following office windows are available:

For urgent questions, which concern operational processes and (IT) failure, market parties can call (24x7) to the GTS CCP center (+31 50 521 1510).

Send your questions related to certificates to certificaten@gasunie.nl

For all other questions and remarks related to the services made available by GTS, please contact the GTS customer desk: customerdesk@gastransport.nl.