

Documentation to use the Elia Infeed web services

Elia
Version 2.0
2019-04-05

Table of Contents

Chapter 1. Introduction	4
1.1. Elia Infeed web page	4
1.2. Elia Infeed web services	4
1.3. Availability of web services	4
Chapter 2. Glossary	5
Chapter 3. HTTP Communication	6
3.1. Connecting to the Elia Infeed web services	6
3.2. HTTP communication through the Web browser	7
3.3. HTTP communication through VB Script	9
Chapter 4. Messages specifications	10
4.1. Methods answers	10
4.1.1. Method GetList answer	10
4.1.2. Method GetLastValuesXml answer.....	10
4.1.3. Method GetCurrentDayValues answer.....	10
4.2. XML reply format.....	10
4.2.1. Field InfeedInjectionListDataResponse and InfeedInjectionDataResponse	10
4.2.2. Field InfeedInjectionValuesData.....	11
4.2.3. Field ErrorMessage.....	11
4.2.4. Field InjectionData.....	11
4.2.5. Field Injection	11
4.2.6. Field InfeedInjectionData.....	11
4.2.7. Field InfeedLastValuesDetail.....	12
4.2.8. Field InfeedHistoricalValue	13
4.2.9. Field LastValue	13
4.3. Method GetLastvalues.....	14
4.3.1. Field Lastvalues.....	15
4.4. Data types	15
Chapter 5. JSON date format	17
5.1. JSON date format.....	17
Chapter 6. Annex – examples of replies.....	18
6.1.1. Example of GetLastValues answer.....	18
6.1.2. Example of GetLastValuesXml answer	18
6.1.3. Example of GetList answer.....	19

6.1.4. Example of GetCurrentDayvalues answer.....	20
6.2. XSDs of the Submitted XML messages	20

Chapter 1. Introduction

1.1. Elia Infeed web page

A new web page is available on the Elia web site : The Elia Infeed web page.

It can be reached using the address <https://www.elia.be/en/grid-data/balancing/Infeed>.

This web page displays only the last values available for the injection stations.

1.2. Elia Infeed web services

Elia supposes that some person or company interested in these values will develop an IT application to handle these values.

To facilitate the development of these applications, Elia puts at disposal a list of web services that returns last values and daily values.

The historical values from previous months are available under CSV files format on the Elia Infeed web page but not under the web service.

No APIs are provided and thus it is up to the interested person to implement the call and the decomposition of the response.

1.3. Availability of web services

Currently, the calls to the Elia web services are anonymous, free and do not require any certificate or confidentiality data as user id password nor any pre-registration.

However Elia may, at any time and without any notice restrict the usage of these web services for security reasons.

Chapter 2. Glossary

Term	Description
ARP	<p>Access Responsible Party. The ARP is responsible for the energy balance of the injections and off takes he manages. An ARP is the only party that can exchange, import and export energy. To do so, he has to submit nominations.</p> <p>The ARP is therefore the company that uses Elia Infeed web services.</p> <p>Note that the call is open to any person. No user id or password is required</p>
DSO	Distribution System Operator
Injection Station	The post on the Elia Grid where some electricity is send to some DSO electrical grid
JSON	J ava S cript O bject N otation, is a text-based open standard designed for human-readable data interchange
REST	R epresentational S tate T ransfer
VB	V isual B asic
VB Script	V isual B asic S cripting Edition

Chapter 3. HTTPs Communication

This section describes how to use the Elia Infeed web services by calling some methods and receiving an answer in following formats:

- XML
- JSON

3.1. Connecting to the Elia Infeed web services

The web services root URL is :

<https://publications.elia.be/Publications/publications/infeed.v1.svc>

All the examples of call in this document refer to this publication web site.

Structure of the web site

The Elia Infeed web services consists of following methods using the REST protocol:

- **GetLastvalues** is used to get the last 2 minutes values of all Injection stations: the result is a JSON message.
- **GetLastvaluesXML** is used to get the last 2 minutes values of all Injection stations: the result is an XML message.
- **GetList** is used to get the list of all injections stations with their characteristics and last values: It is an XMLmessage.
- **GetCurrentDayvalues** is used to all the values for all 2 minutes and all injections stations for the current day.

The following table indicates which message types are expected and returned by the different pages:

Page	Input message	Output message	Format
GetLastvalues	None	JSON list	JSON
GetLastvaluesXml	None	InfeedInjectionValuesData	XML
GetList	None	InfeedInjectionListDataResponse See Method GetList answer	XML
GetCurrentDayvalues	None	InfeedInjectionListDataResponse _Method GetCurrentDayValues answer	XML

Handling the connection

To establish an Internet connection with the Elia Infeed web services, the following rules must be observed:

- HTTPS must be used. No user id or password is required.
- Request must be sent by HTTPS GET method.
- The content type should be "text/xml" and character set charset="ISO-8859-1" (except if your system does not support it).

Error handling

In case of an error (invalid request, internal error or else), each page return.

- an [Error](#) message or
- an HTTP status of 510, 400, 401, etc.

instead of their normal output.

3.2. HTTPs communication through the Web browser

For the facility of the developer, the Elia web services may be called also from a web browser.

Here is an example of how to communicate with the Elia Infeed web services with your browser: When typing the web service complete URL address on the URL of the web browser, the answer appears as a XML page:

Following tests are made using Microsoft Edge.

Example of call <https://publications.elia.be/Publications/publications/infeed.v1.svc/GetList>

```

<?xml version="1.0" encoding="ISO-8859-1"?>
- <InfeedInjectionListDataResponse xmlns:i="http://www.w3.org/2001/XMLSchema-instance" xmlns="http://schemas
  <ErrorMessage/>
  - <InjectionData>
    - <Injections>
      - <InfeedInjectionData>
        <Dso>INTERGEM</Dso>
        <EanCode>541453161252993345</EanCode>
        <HistoricalValues i:nil="true"/>
        <InjectionStation>AALNO 15</InjectionStation>
        - <LastValue>
          <EanCode>541453161252993345</EanCode>
          <Flag>Valid</Flag>
          <LastValue>-26.135</LastValue>
        </LastValue>
        <Location>AALST</Location>
        <Region>Flanders</Region>
        <VoltageLevel>15</VoltageLevel>
      </InfeedInjectionData>
    - <InfeedInjectionData>
      <Dso>INTERGEM</Dso>
      <EanCode>541453198270815618</EanCode>
      <HistoricalValues i:nil="true"/>
      <InjectionStation>AALST 15</InjectionStation>
      - <LastValue>
        <EanCode>541453198270815618</EanCode>
        <Flag>Valid</Flag>
        <LastValue>-4.019</LastValue>
      </LastValue>
      <Location>AALST</Location>
      <Region>Flanders</Region>
      <VoltageLevel>15</VoltageLevel>
    </InfeedInjectionData>
  - <InfeedInjectionData>
    <Dso>IMEWO</Dso>
    <EanCode>541453118726748222</EanCode>
    <HistoricalValues i:nil="true"/>
    <InjectionStation>AALTE 12</InjectionStation>
    - <LastValue>
      <EanCode>541453118726748222</EanCode>
      <Flag>Valid</Flag>
      <LastValue>-16.836</LastValue>
    </LastValue>
    <Location>AALTER</Location>
    <Region>Flanders</Region>
    <VoltageLevel>12</VoltageLevel>
  </InfeedInjectionData>
- <InfeedInjectionData>
  <Dso>IMEWO</Dso>
  <EanCode>541453144442341676</EanCode>
  <HistoricalValues i:nil="true"/>
  <InjectionStation>AALVE 36</InjectionStation>
  <LastValue i:nil="true"/>
  <Location>AALTER</Location>
  <Region>Flanders</Region>
  <VoltageLevel>36</VoltageLevel>

```

Following browsers were tested at the time of publication but support is given:

- Chrome
- FireFox

3.3. HTTPs communication through VB Script

Here is an example of how to communicate with the Elia Infeed web services with a VB Script code.

This method is compatible with Windows 10. Note that the Microsoft XML Parser (MSXML2) needs to be installed on the computers that will execute the script.

```
'This script calls the GetList method of Elia Infeed Web service
baseUrl = "https://publications.elia.be/Publications/publications/infeed.v1.svc »
Set o = CreateObject("Msxml2.ServerXMLHTTP")
o.open "GET", baseUrl & "/GetList"
o.setRequestHeader "Content-type", "text/xml; charset=""ISO-8859-1""
o.setRequestHeader "Content-length", len(getData)
o.send getData
WScript.Echo "HTTP STATUS : " & o.status & " text " & o.statusText
WScript.Echo o.responseText
```

Each main command is described here below:

```
Set o = CreateObject("Msxml2.ServerXMLHTTP")
```

We create an instance of the ServerXMLHTTP object that serves to establish HTTP connection to the Elia Infeed web services.

```
o.open "GET", baseUrl & "/GetList"
```

Initialize an XMLHTTP request and specify the method, URL of the information for the request.

In this case we call the "GET" method of the GetList page in synchronous mode

```
o.setRequestHeader "Content-type", "text/xml; charset=""ISO-8859-1""
o.setRequestHeader "Content-length", len(getData)
```

We specify that the type of the request is XML, the length of the data we will transmit to the called page and the encoding must be ISO-8859-1

```
o.send getData
```

We send the HTTP request to the Elia Infeed web services and wait for the response.

2 following lines allow to display on the screen the result of the request and the status of this result:

```
WScript.Echo "HTTP STATUS : " & o.status & " text " & o.statusText
WScript.Echo o.responseText
```

Chapter 4. Messages specifications

This chapter explains in an object approach the context of the messages.

4.1. Methods answers

4.1.1. Method `GetList` answer

This request allows to know all injection stations from the Elia Grid to the DSO

This request has no input parameter

Output parameters [InfeedInjectionListDataResponse](#)

An example of reply can be found at this paragraph : [_Example of GetList answer](#)

4.1.2. Method `GetLastValuesXml` answer

This request allows to know all injection stations from the Elia Grid to the DSO

This request has no input parameter

Output parameters [InfeedInjectionListDataResponse](#)

An example of reply can be found at this paragraph : [_Example of GetLastValuesXml answer](#)

4.1.3. Method `GetCurrentDayValues` answer

This method allow to retrieve all the values from all the injection stations from the beginning of the current day until the last values

Output parameters [InfeedInjectionValuesData](#)

An example of reply can be found at this paragraph : [_Example of GetCurrentDayvalues answer](#)

4.2. XML reply format

The XSD for [InfeedInjectionListDataResponse](#), [InfeedInjectionValuesData](#) and [InfeedInjectionListDataResponse](#) are referenced in [_XSDs](#) of the Submitted XML messages

4.2.1. Field `InfeedInjectionListDataResponse` and `InfeedInjectionDataResponse`

These 2 fields use the same structure in a slightly different way

Field	Use the field
InfeedInjectionListDataResponse	LastValue
InfeedInjectionDataResponse	HistoricalValues

Content:

Field	Cardinality	Data type	Description
ErrorMessage	mandatory	String	Possible error
InjectionData	mandatory	int	Interval period

Field	Cardinality	Data type	Description
LastTime	Mandatory in InfeedInjectionListDataResponse	dateTime	Date and Time of the last Time

4.2.2. Field InfeedInjectionValuesData

Field	Cardinality	Data type	Description
ErrorMessage	mandatory	String	Possible error
InjectionData	mandatory	int	Interval period
LastTime	Mandatory in InfeedInjectionListDataResponse	dateTime	Date and Time of the last Time
LastValuesDetails	mandatory	List of InfeedLastValuesDetail	Information about each last value

4.2.3. Field ErrorMessage

Cardinality	The field is always present. But is empty if the result is OK
Data type	String

4.2.4. Field InjectionData

Cardinality	Optional : this field is not used if there is an error
Data type	The list of Injection stations with their last values : field Injection

4.2.5. Field Injection

Cardinality	Mandatory
Data type	The list of Injection stations with their last values : field InfeedInjectionData

4.2.6. Field InfeedInjectionData

This field represents an Injection Station with all its features and the related values

Field	Cardinality	Data type	Description
Dso	mandatory	String	The list of DSO associated with this Injection station: separated by "/"
EanCode	mandatory	String	String of 18 digits representing the EAN code (defined by Elia) of the Injection station

Field	Cardinality	Data type	Description
HistoricalValues	Optional	List of InfeedHistoricalValue	List of historical values of this day used in InfeedInjectionDataResponse Present but with no value in InfeedInjectionListDataResponse
InjectionStation	mandatory	String	Name of the injection station
LastValue	mandatory	LastValue	Information about the last value used in InfeedInjectionListDataResponse Present but with no value in InfeedInjectionDataResponse
Location	mandatory	City name	
Region	mandatory	List of Belgian region	The list of Regions associated with this Injection station: separated by "/" Possible values: <ul style="list-style-type: none"> - Brussels - Flanders - Wallonia
VoltageLevel	mandatory	The injection station voltage	Any number between 1 and 380. The current values are: <ul style="list-style-type: none"> - 10 - 11 - 12 - 13 - 15 - 30

4.2.7. Field InfeedLastValuesDetail

Field	Cardinality	Data type	Description
EanCode	mandatory	String	String of 18 digits representing the EAN code (defined by Elia) of the Injection station
Flag	mandatory	Enumerated	Valid : information is valid Invalid : the information is invalid
LastValue	mandatory	LastValue	Information about the last value used in InfeedInjectionListDataResponse

Field	Cardinality	Data type	Description
			Present but with no value in InfeedInjectionDataResponse

4.2.8. Field InfeedHistoricalValue

This field is always present but have no information if no data is available

Remark: if an historical value is not available , then related field InfeedHistoricalValue is not present

Field	Cardinality	Data type	Description
Time	mandatory	Date	Date in the format Example: 2013-08-13T00:01:00
Value	mandatory	Double	Double: From - 9999.999 to 9999.999 Maximum 3 decimals

4.2.9. Field LastValue

This field is always present but has no information if no data is available

Field	Cardinality	Data type	Description
EanCode	mandatory	String	String of 18 digits representing the EAN code (defined by Elia) of the Injection station Same value as the EANCode indicated above : it allow to treat only these elements
Flag	mandatory	Enumerated	Valid : information is valid Invalid : the information is invalid
InjectionStation	mandatory	String	Name of the injection station
LastValue	mandatory	Double	Double: From - 9999.999 to 9999.999 Maximum 3 decimals

4.3. Method GetLastvalues

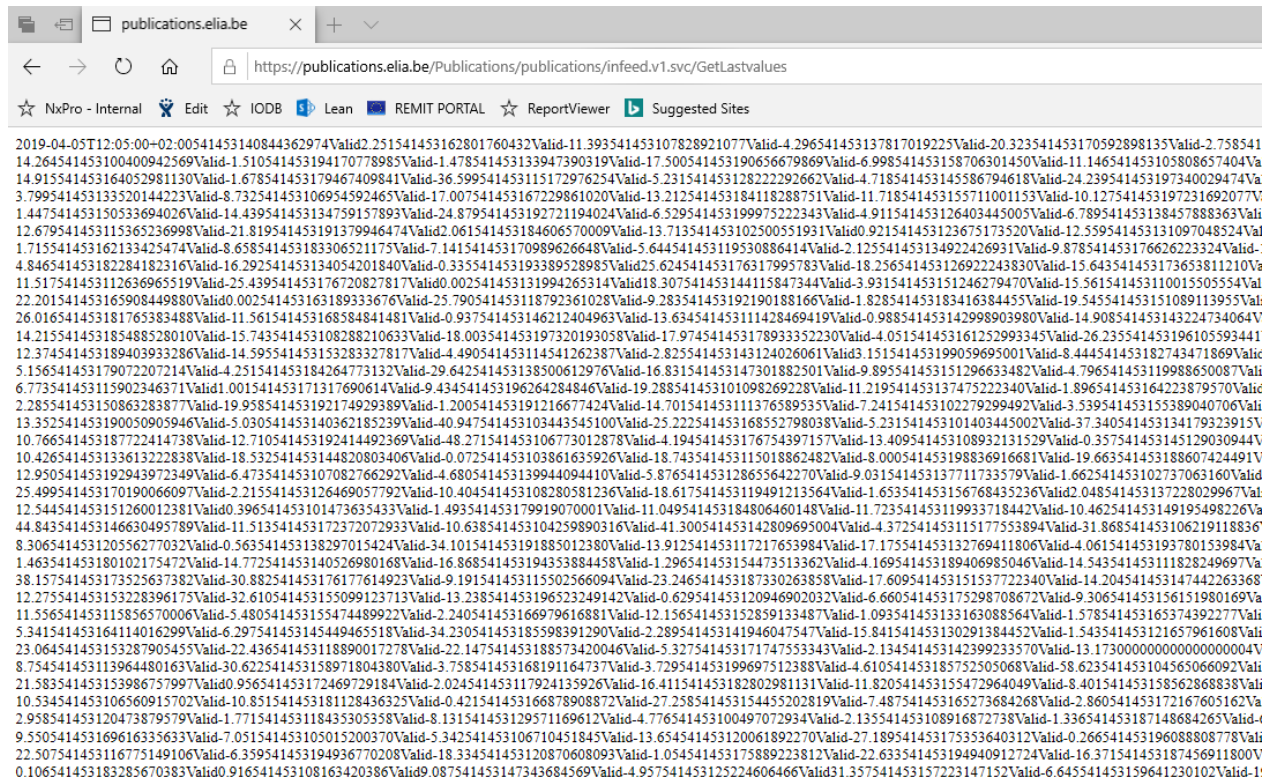
The method GetLastvalues returns a JSON format.

Please note:

- This method returns only the last values within a compacted message
This is why Elia has chosen this format and recommend to use it in a running application for performance purpose
- Please note that GetList and GetLastvaluesXml return also the last values within an Xml format
- Using Internet Explorer, it impose to save the content within a file
- Elia reserves the right to limit the call frequency responses for security purpose

Example on

<https://publications.elia.be/Publications/publications/infeed.v1.svc/GetLastvalues>



An example of reply can be found at this paragraph : Example of GetLastValues answer

Field	Cardinality	Data type	Description
LastTime	mandatory	Date and Time	The date and time of the last values in the JSO format (See JSON date format)

Field	Cardinality	Data type	Description
LastValuesDetails	mandatory	List of Lastvalues	List of last values for each Injection station

4.3.1. Field Lastvalues

Field	Cardinality	Data type	Description
EanCode	mandatory	String	String of 18 digits representing the EAN code (defined by Elia) of the Injection station Same value as the EANCode indicated above : it allow to treat only these elements
Flag	mandatory	Enumerated	Valid : information is valid Invalid : the information is invalid
LastValue	mandatory	Double	Double: From - 9999.999 to 9999.999 Maximum 3 decimals

4.4. Data types

The following table describes all the data types allowed in XML data structure specifications:

Data type	Typical XML representation	Lexical pattern	Comments
string		.*	The following constraints can be expressed: minimum length, maximum length, pattern, choice of valid values.
decimal	-1.23, 12678967.543233, +100000.00, 210	[-+]?[0-9]+(\. [0-9]+)?	The following constraints can be expressed: minimum value, maximum value. Values must have at most 28 digits

Data type	Typical XML representation	Lexical pattern	Comments
boolean	1, 0, true, false	1 0 true false	
datetime	Date and time in local time To indicate 1:20 pm on May the 31st, 1999 in Brussels, one would write: 1999-05-31T13:20:00	[0-9]{4}-[0-9]{2}-[0-9]{2}T[0-9]{2}:[0-9]{2}:[0-9]{2}?(?:[+-][0-9]{2}:[0-9]{2})??	Represents a time instant. If the time zone offset is not indicated, UTC is assumed. See also the example below for daylight saving time handling.
time	13:20:00+02:00	[0-9]{2}:[0-9]{2}:[0-9]{2}?(?:[+-][0-9]{2}:[0-9]{2})??	Represents a time instant in the day. If the time zone offset is not indicated, UTC is assumed. See also the example below for daylight saving time handling.

Chapter 5. JSON date format

JSON is becoming very popular format to exchange data between client and server in Web 2.0 applications.

5.1. JSON date format

Everything works very smooth apart from date in JSON. Date format in JSON is something like `\Date(-606769200000+0200)\` where `-606769200000` is number of milliseconds from January 1, 1970 and `+0200` is time offset (Belgian summer time).

The web has many routines to transform this date and time

Here below the way to do in C# (.NET)

```
string jsonDate = "1376404020000+0200";
string datePart = jsonDate.Substring(0, jsonDate.IndexOf('+'));
string offset = jsonDate.Substring(jsonDate.IndexOf('+'), 3);
DateTime dt = new DateTime(1970, 1, 1, 0, 0, 0,
DateTimeKind.Utc).AddMilliseconds(Int64.Parse(datePart));
DateTimeOffset dto = new DateTimeOffset(dt.ToLocalTime(),
TimeSpan.FromHours(Double.Parse(offset)));
```

Or an example in VBA

```
Const test = "1376400180000+0200"
Dim dateStr As String: dt = Left$(test, 13)
Dim Houroffset As String: off = Mid$(test, 14)
Dim d As Date: d = DateAdd("s", CCur(dt) / 1000, "01/01/1970")
```

Chapter 6. Annex – examples of replies

6.1.1. Example of GetLastValues answer

```
{
  "LastTime": "\Date(1376406180000+0200)\",
  "LastValuesDetails":
  [
    {"EanCode": "541453151537722340", "Flag": 0, "LastValue": -1.620},
    {"EanCode": "541453162133425474", "Flag": 0, "LastValue": -7.005},
    [other Injection station values]
    {"EanCode": "541453139472597834", "Flag": 0, "LastValue": 36.930},
  ]
}
```

6.1.2. Example of GetLastValuesXml answer

```
<InfeedInjectionValuesData
  xmlns="http://schemas.datacontract.org/2004/07/Elia.PublicationService.DomainInterface.Infeed.v1"
  xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <LastTime>2013-09-04T13:15:00+02:00</LastTime>
  <LastValuesDetails>
    <InfeedLastValuesDetail>
      <EanCode>541453105015200370</EanCode>
      <Flag>Valid</Flag>
      <LastValue>154.618</LastValue>
    </InfeedLastValuesDetail>
    [other Injection station values]
    <InfeedLastValuesDetail>
      <EanCode>541453151537722340</EanCode>
      <Flag>Valid</Flag>
      <LastValue>-2.120</LastValue>
    </InfeedLastValuesDetail>
  </LastValuesDetails>
</InfeedInjectionValuesData>
```

6.1.3. Example of GetList answer

```
<InfeedInjectionListDataResponse
xmlns="http://schemas.datacontract.org/2004/07/Elia.PublicationService.DomainInterface.Infeed.v1"
xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <ErrorMessage/>
  <InjectionData>
    <Injections>
      <InfeedInjectionData>
        <Dso>TECTEO</Dso>
        <EanCode>541453113100397584</EanCode>
        <HistoricalValues i:nil="true"/>
        <InjectionStation>HANNU 15</InjectionStation>
        <LastValue>
          <EanCode>541453113100397584</EanCode>
          <Flag>Valid</Flag>
          <LastValue>3.000</LastValue>
        </LastValue>
        <Location>RDHANNU</Location>
        <Region>Wallonia</Region>
        <VoltageLevel>15</VoltageLevel>
      </InfeedInjectionData>

      [list of injection stations]

    </Injections>
    <LastTime>2013-08-13T15:23:00+02:00</LastTime>
  </InjectionData>
</InfeedInjectionListDataResponse>
```

6.1.4. Example of GetCurrentDayvalues answer

```
<InfeedInjectionDataResponse
xmlns="http://schemas.datacontract.org/2004/07/Elia.PublicationService.DomainInterface.Infeed.v1"
xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <ErrorMessage/>
  <InjectionData>
    <InfeedInjectionData>
      <Dso>TECTEO</Dso>
      <EanCode>541453113100397584</EanCode>
      <HistoricalValues>
        <InfeedHistoricalValue>
          <Time>2013-08-13T00:01:00</Time>
          <Value>-0.10</Value>
        </InfeedHistoricalValue>

        [list of Infeed stations with there characteristics]

      </HistoricalValues>
      <InjectionStation>test</InjectionStation>
      <LastValue i:nil="true"/>
      <Location></Location>
      <Region>Flanders/Wallonia</Region>
      <VoltageLevel>30</VoltageLevel>
    </InfeedInjectionData>
  </InjectionData>
</InfeedInjectionDataResponse>
```

6.2. XSDs of the Submitted XML messages

In addition to the original [message specifications](#), a XSD (XML Schema), exist for all the creation messages at the following addresses:

<http://nedi1.elia.be/namespaces/public/Scheduling/Infeed.xsd>