ECRB review on gas quality in the Energy Community

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1. **Regulation (EC) 2015/703 - NC INT**
   - NC INT, Chapter IV Gas quality and odourisation sets rules which define:
     - TSOs cooperation to avoid restrictions to cross-border trade due to gas quality difference
     - TSOs obligation to hourly publish Wobbe index and GCV on IPs
     - TSOs obligation to inform about short term gas quality variation on exits to customers/DSO/SSO with operations process sensitive on gas quality changes
     - Managing cross-border trade restrictions due to difference in odourisation practices

2. **CEN standard EN 16726:2015 for Gas quality Group H**
   - CEN standard EN 16726 define:
     - Min. and Max. value for Relative density (Wobbe index is deleted)
     - Max. value for Total sulfur, Hydrogen sulfide + Carbonyl sulfide and Mercaptan Sulphur
     - Max. Value for Oxgen and Carbon dioxide

3. **Gas composition**
   - Defined in import contracts and national legislation in some countries
Analysis of gas quality regulation in SSE

1. Methodology
   - Data for analysis based on information from NRA in 2016
   - Analyzed NC INT, CEN standard EN 16726 and natural gas composition in SSE
   - Results cover EU countries: Austria, Greece, Hungary, Italy, Poland, Romania and EnC countries Bosnia and Herzegovina, FYR of Macedonia, Moldova, Serbia and Ukraine
   - Assessment of Gas Quality regulation and practice

2. Deliverable
   - Study on interoperability and gas quality parameters in SSE available on the EnC web site (https://www.energy-community.org/dam/jcr:fb99a89f-d66e-49e8-ac0f-fbe8ae70d27f/ECRB_network_code.pdf)
Geographic scope
Findings - NC INT Gas quality and odourisation

1. Gas quality and odourisation practice on EnC IPs
   - Gas quality differences never caused a restriction in cross-border trade on EnC-EnC and EU-EnC IPs
   - TSOs did not publish Wobbe-index and gross calorific value for gas at all on IPs in B&H, Ukraine and one IP in Moldova
   - TSOs published Wobbe-index and gross calorific value weekly at one IP in Moldova
   - Serbian TSO publishes daily Wobbe-index and lower calorific value for different temperature reference condition for volume and combustion(15°C/15°C)
   - TSOs in EnC do not have an obligation to inform about short term gas quality variation on exit (at that time NC INT was not obligatory in EnC)
   - Differences in odourisation practice never caused a restriction in cross-border trade
### Natural gas parameters

<table>
<thead>
<tr>
<th>Country</th>
<th>GCV KWh/m³</th>
<th>Wobbe KWh/m³</th>
<th>Total sulfur mg/m³</th>
<th>Mercaptane sulfur mg/m³</th>
<th>H2S mg/m³</th>
<th>Oxygen %mol</th>
<th>Water dew point °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>FYR of Macedonia</td>
<td>10.471 average</td>
<td>13.821 average</td>
<td>Max. 20</td>
<td>Max. 5</td>
<td>Max. 5</td>
<td>0.2</td>
<td>-8/40 bar</td>
</tr>
<tr>
<td>Moldova</td>
<td>Min. 10,343 – 11,212</td>
<td>12,074 – 15,937</td>
<td>NO</td>
<td>Max. 36</td>
<td>Max. 20</td>
<td>1</td>
<td>NO</td>
</tr>
<tr>
<td>Serbia</td>
<td>10,562 – 10,659</td>
<td>13,650 – 14,950</td>
<td>Max. 20</td>
<td>Max. 5.6</td>
<td>Max. 5</td>
<td>NO</td>
<td>-5/40 bar</td>
</tr>
<tr>
<td>Ukraine</td>
<td>10,102 – 10,659</td>
<td>11,402 – 15,085</td>
<td>NO</td>
<td>Max. 20</td>
<td>Max. 6</td>
<td>0.02</td>
<td>-2,5/70 bar</td>
</tr>
<tr>
<td>Austria</td>
<td>10,700 – 12,800</td>
<td>13,330 – 15,700</td>
<td>Max. 10</td>
<td>Max. 6</td>
<td>Max. 5</td>
<td>0.5</td>
<td>-8/40 bar</td>
</tr>
<tr>
<td>Italy</td>
<td>10,234 – 13,259</td>
<td>13,852 – 15,322</td>
<td>Max. 158</td>
<td>Max. 16,35</td>
<td>Max. 5</td>
<td>0.6</td>
<td>-5/70 bar</td>
</tr>
<tr>
<td>Poland</td>
<td>Min. 10,556 – 10,806</td>
<td>Max. 20</td>
<td>Max. 16</td>
<td>Max. 7</td>
<td>0.2</td>
<td>-5/55 bar</td>
<td></td>
</tr>
<tr>
<td>Romania</td>
<td>Min. 9,094</td>
<td>NO</td>
<td>Max. 100</td>
<td>Max. 8</td>
<td>Max. 6,8</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>Greece</td>
<td>10.200 – 13.710</td>
<td>13.100 – 16.370</td>
<td>Max. 80</td>
<td>NA</td>
<td>Max. 5.4</td>
<td>0.2</td>
<td>5/80 bar</td>
</tr>
<tr>
<td>Hungary</td>
<td>8.600 – 12.580</td>
<td>12.680 – 15.210</td>
<td>Max. 100</td>
<td>NA</td>
<td>Max. 20</td>
<td>0.2</td>
<td>-8/40 bar</td>
</tr>
</tbody>
</table>
Natural gas composition in EnC
Compliance with Gas quality regulation

1. Compliance with NC INT
   - In EnC CPs, gas quality differences and odourisation practice never caused problems on IPs
   - EnC CPs did not implement TSOs obligation to publish GCV and Wobbe index every hour and inform about short-term gas quality variation
   - EU countries have obligation to implement NC INT

2. Wobbe index and compliance with CEN standard EN 16726
   - Some countries have defined only min or average value for Wobbe index
   - In some countries range is very wide for Wobbe index
   - Sulfur, oxygen, carbon dioxide and hydro carbon and water dew temperature are
     - out of range in some countries and
     - it is not defined in some other countries

3. Natural gas chemical compositions
   - chemical compositions are not defined in most of the countries
   - Differences in min methane percentage between countries which produce gas and only import gas
Recommendation for Gas quality regulation in EnC countries

1. NC INT implementation in national legislation
   - EnC CPs, with EnC Secretariat’s assistance, should define action plans for implementation of all NCs in national legislation
   - Consultation about technical details in implementation with ENTSOG will be very helpful
   - EnC Report about NC implementation progress at least one per year

2. Natural Gas parameters and composition
   - All natural gas parameters in all countries should be in line with CEN - EN 16726 standard minimum on IPs
   - Gas quality parameters of new sources of gas in region (TAP, Turkish Stream, LNG and other projects) should be in line with CEN standard EN 16726
   - Wobbe index range should be defined at least as a recommendation
   - Natural gas compositions could be defined on national level
Thank you!

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