Vacuum truck off-gas treatment during a tank cleaning process

Initial situation:

During a high-pressure cleaning inside a tank, a contamination of approx. 500 ppm benzene was expected based on sample measurements.
To ensure safe operation, the exhaust air generated during this process should be collected with a vacuum truck and treated afterwards.
Since a vacuum truck can't clean its polluted exhaust air, BROCKHAUS ENVIRONMENT was asked on short notice to clean the off-gas of the vacuum truck.

Solution:

- BROCKHAUS SARA our mobile vacuum truck off-gas treatment unit

Result:

The high-pressure cleaning took about 15 hours, within this period a volume flow of about 16.000 m³ was conveyed and subsequently treated.
The Ø benzene concentration was approx. 521 ppm, which corresponds to an approx. amount of 27 kg pure benzene in 16.000 m³ exhaust air, that would have been emitted to the environment without cleaning.[*1]
In addition 521 ppm benzene exceed the EU occupational exposure limit about 530 times (limit = 3,25 mg/m³).[*2]
Legal issues aside, the affected employees would have been exposed to a significant amount of benzene.
The long-term effects of a benzene exposure and the associated high probability of cancer are well known.
In conclusion, it can be said that the use of the BROCKHAUS SARA ensured compliance with the German “TA-Luft” and in particular, the protection of the people on site and the environment.

[*1] 521 ppm benzene | 1.013,25 mbar | 15 °C ≈ 1.721,10 mg/m³ benzene
1.721,10 mg/m³ x 16.000 m³ = 27.537.600 mg ≈ **27 kg benzene**

[*2] 521 ppm benzene | 1.013,25 mbar | 15 °C ≈ 1.721,10 mg/m³ benzene
1.721,10 mg/m³ / 3,25 mg/m³ ≈ **530**

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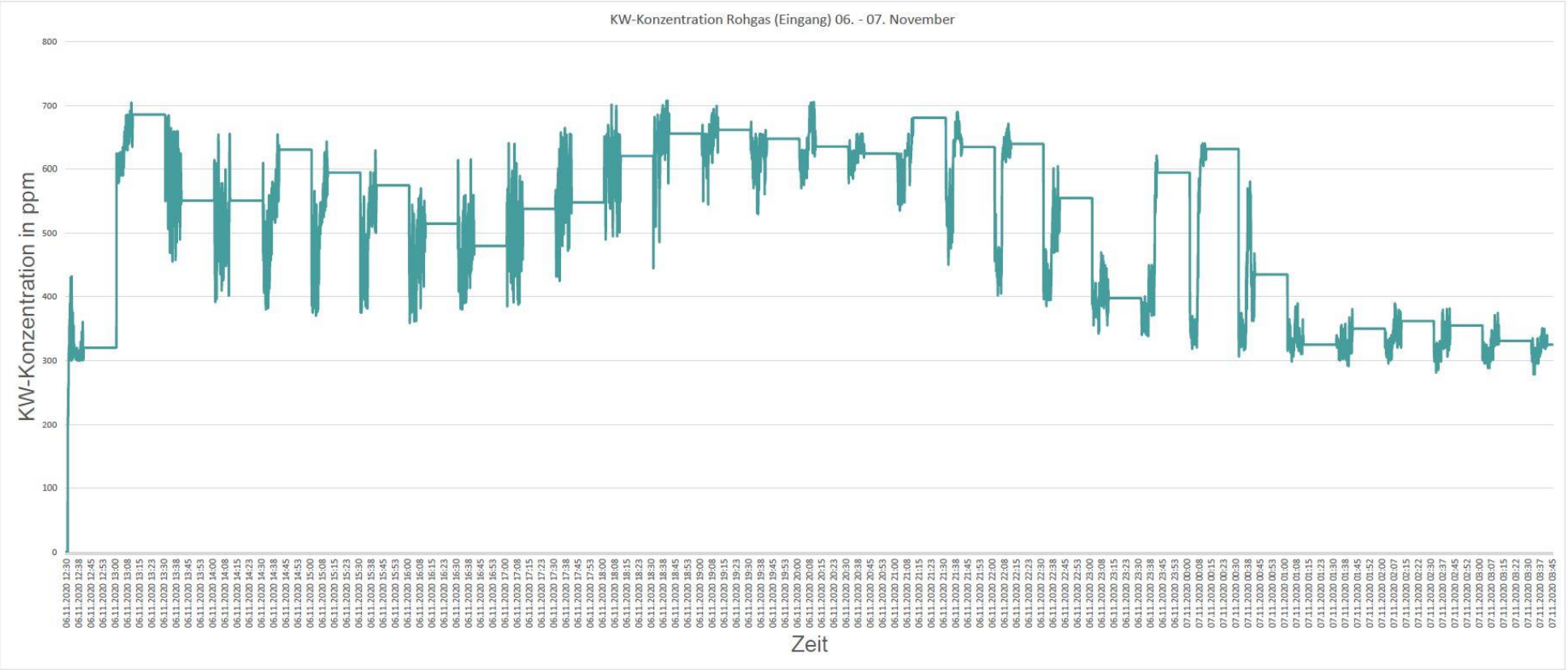
Hydrocarbon concentration in ppm entrance:



The constant intervals result from the predetermined cycles of the sensors.
During the process of fresh air purging and sample gas aspiration, the previously measured values are frozen.

Within the period when there is no volume flow, the remaining gas within the line is measured.

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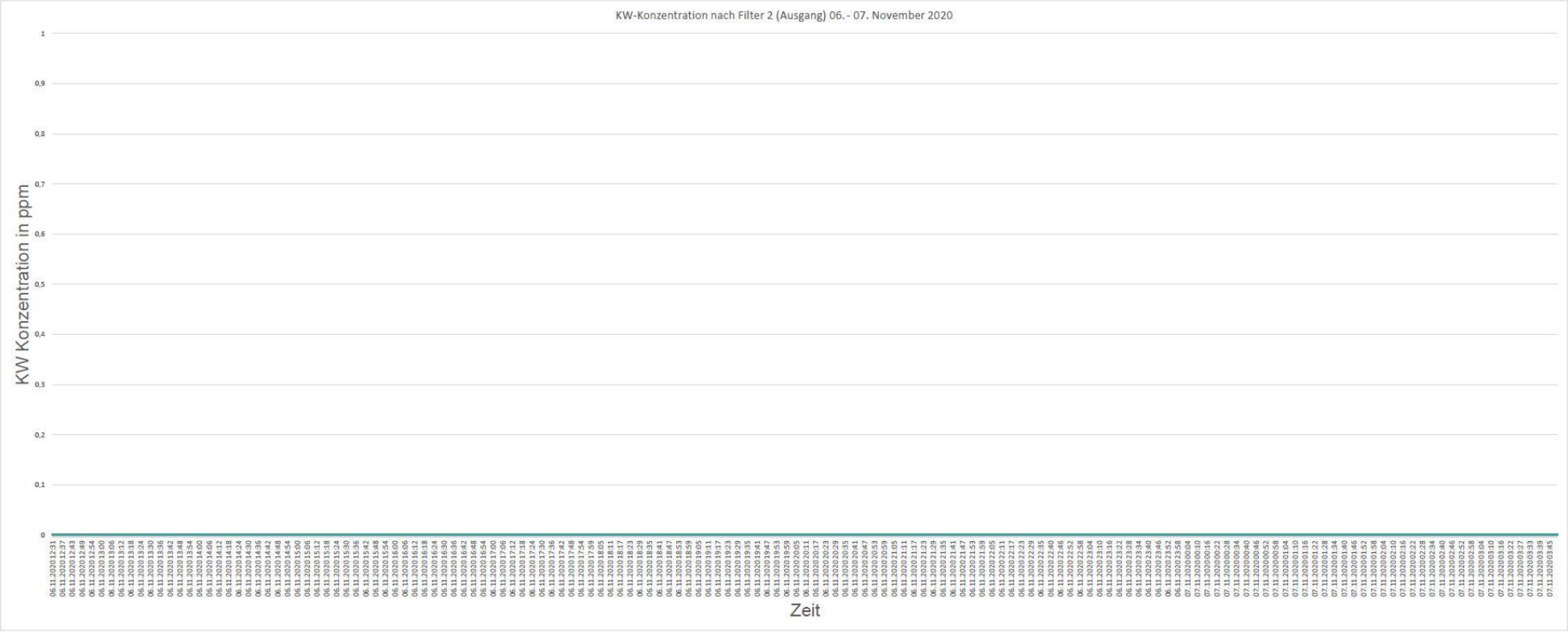
Hydrocarbon concentration in ppm exit:



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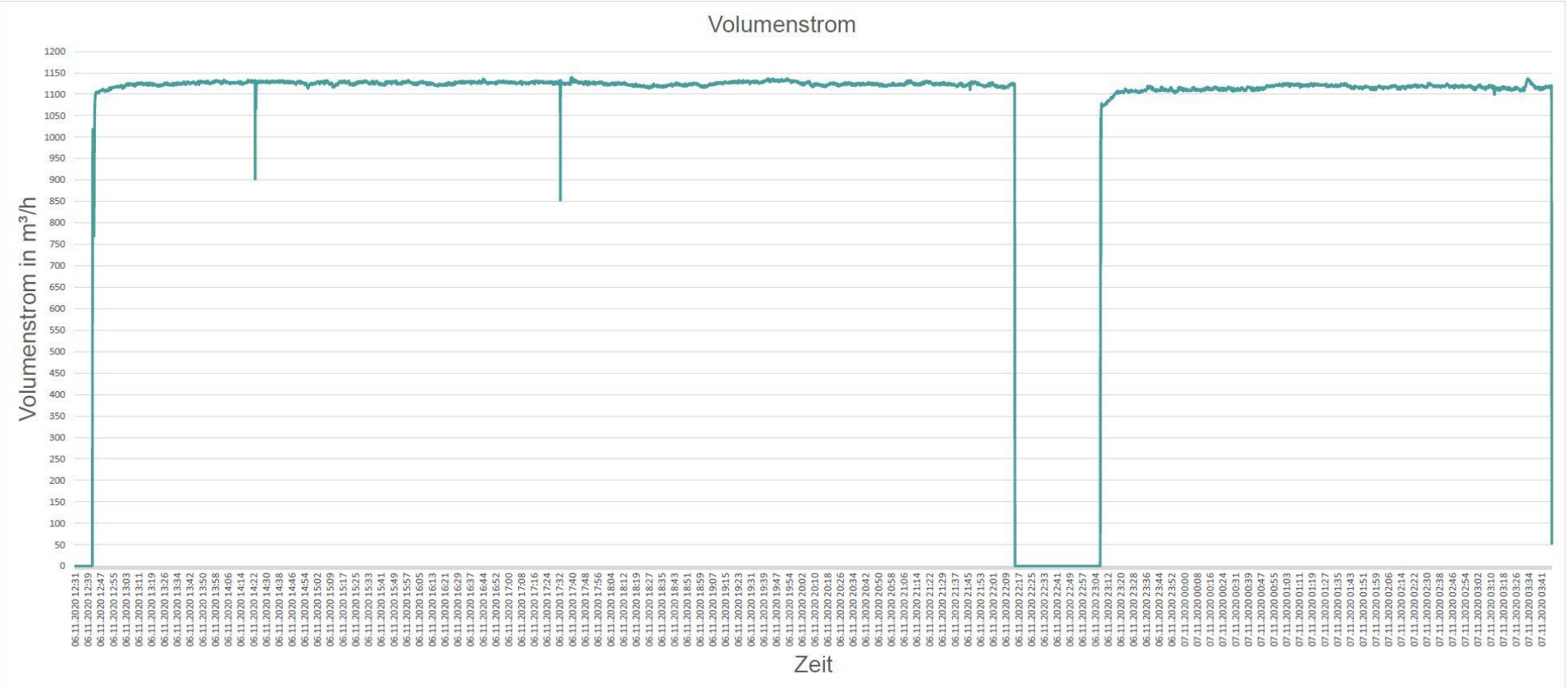
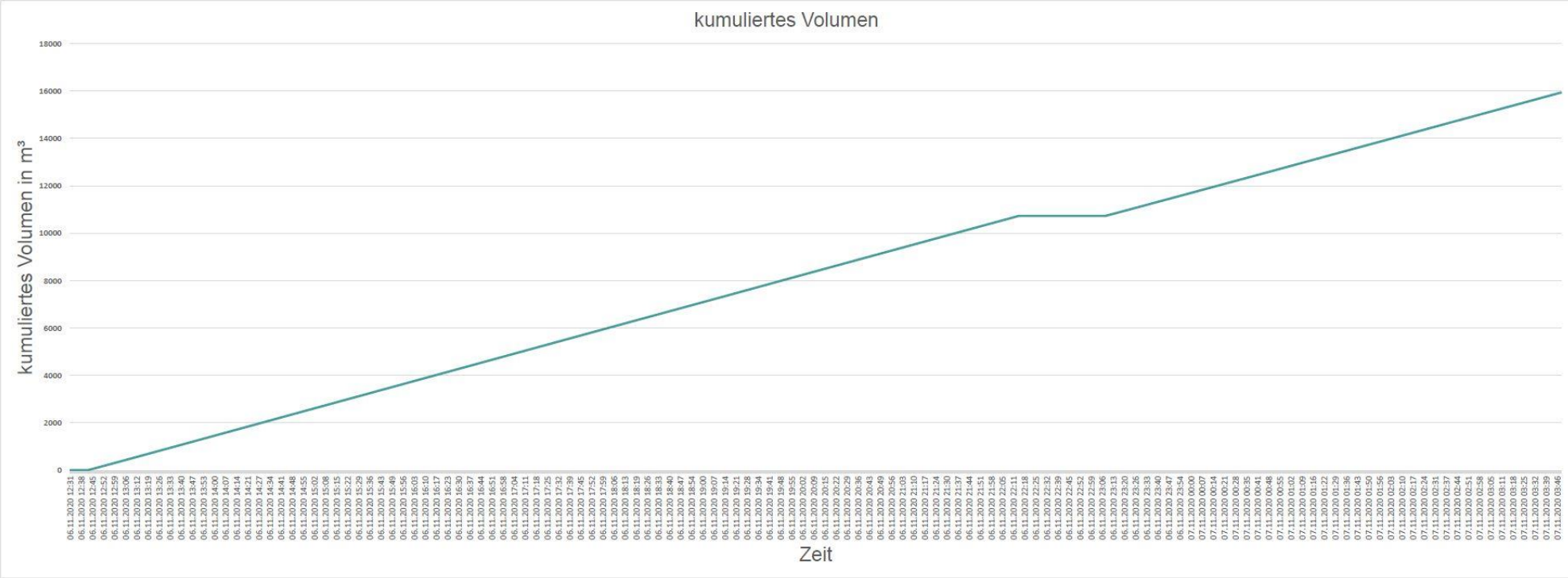
Volume flow in m³/h:



Cumulative volume flow in m³:



BROCKHAUS SARA

Mobile vacuum truck off-gas treatment unit

Properties:

- **High effective adsorption** of **VOC, H_2S, NH_3 & Hg -** even combinations of substances!
- **Fast & easy connection** to every vacuum truck, **plug & safe!**
- Shortly with **EC type-examination certificate** – whole system ex-protected!
- **Mobile availability** thanks to **roll platform or trailer** – upon request with **towing vehicle**
- Gas **measurement system** with **constant monitoring, incl. safety system** & automatic **N_2 inerting**

Advantages:

- **Emission avoidance** according **German "TA-Luft"** or **Netherlands "NeR"!**
- **Data storage**/transmission, i.a. as a **proof for cleaning perfomance!**
- **More effective & safer than** typical used **gas scrubbers!**
- **Ensuring health & environmental protection** at your site!

For more information or enquiries, contact me!

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