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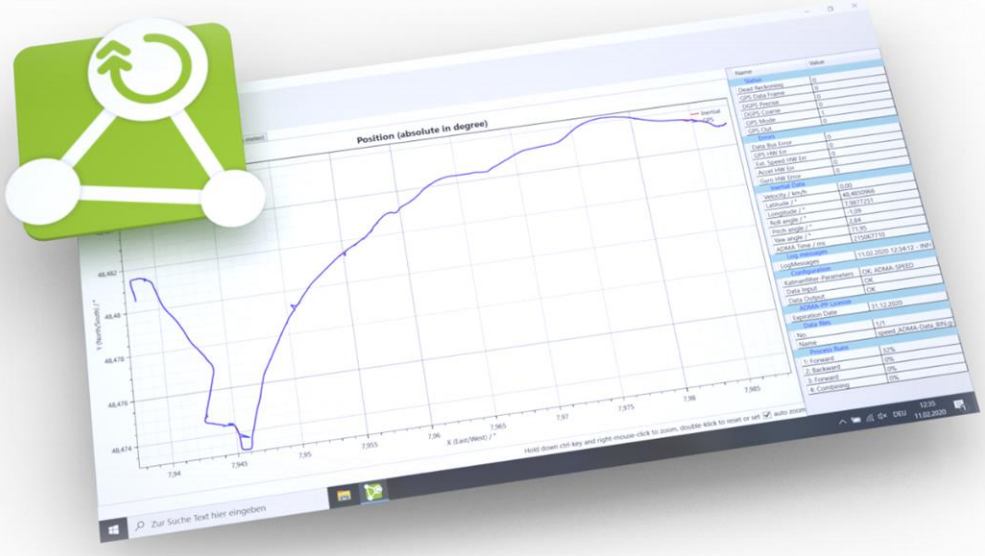
ADMA-PP PERFORMANCE INDICATORS



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TEST CONDITIONS

ADMA-PP Version:	v1.11.0.0
Reference Data:	ADMA-G Pro with RTK2 VRS
ADMA HW:	30.3.1.2
ADMA FW:	30.9.0.27
Extern Velocity HW:	Kistler Correvit S-350 Aqua

In this test scenario, measurement data from an ADMA-G Pro+ with correction data was used as a reference for a 15 km highway trip. In comparison to this ADMA, different GNSS outages were now considered with the duration of 1 minute, 2 minutes and 5 minutes. For each comparison, the ADMA online data and the offline ADMA-PP combined data were compared with the reference, once without external speed signal and once with.

Note: The drift effects in case of GNSS failure depend very much on the length of the outage and on the strength and amount of dynamic stimulations. This means that this document is only an example analysis for the circumstances given here. The ADMA and the ADMA-PP may react completely different to other conditions.
GNSS outages in the online ADMA data cause a drift effect of the position. The better the IMU of the system, the less drift will occur. At the end of the outage, the signal "jumps" back to the true position. In contrast to this, the ADMA-PP signal contains no position "jumps". Instead, an position offset is building up to a maximum in mid of the GNSS outage.

*For further information to the ADMA-PP, please refer to the **ADMA-PP Whitepaper**.*

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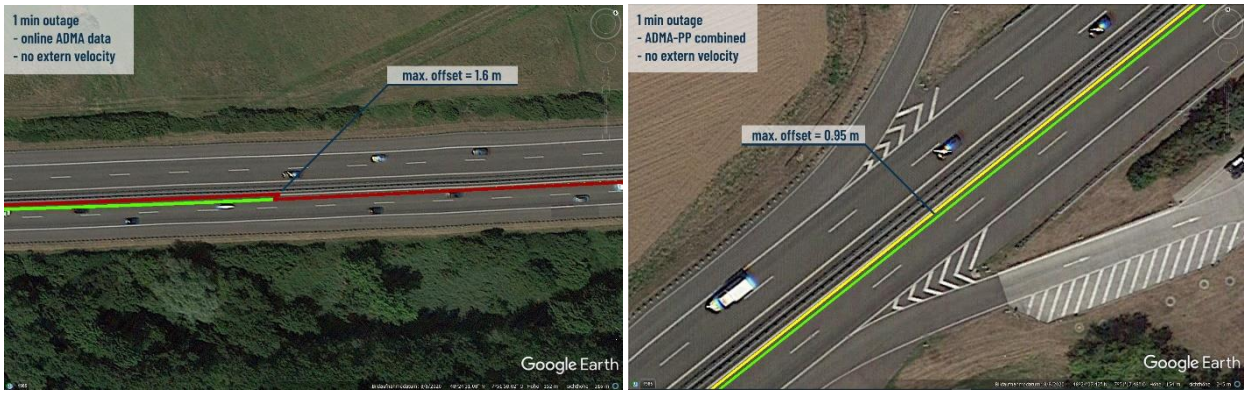
COMPARING THE MAX. DRIFT EFFECTS OF DIFFERENT GNSS OUTAGE CONSTELLATIONS

1. 1 MINUTE GNSS OUTAGE:

1.1 Without extern velocity

- 1 minute GNSS outage
- no extern velocity

Reference Signal
Online ADMA data with GNSS outage
ADMA-PP combined



Max. drift effect (offset):

- Online ADMA data: **1.6 m** *(with a jump back to the reference at the end of the offset)*
- ADMA-PP combined: **0.95 m** *(Without position jump, but with offset building up in mid of the outage)*

1.2 With extern velocity

- 1 minute GNSS outage
- with extern velocity

Max. drift effect (offset):

- Online ADMA data: **1.5 m** *(with a jump back to the reference at the end of the offset)*
- ADMA-PP combined: **0.1 m** *(Without position jump, but with offset building up in mid of the outage)*

2. 2 MINUTES GNSS OUTAGE

2.1 Without extern velocity

- 2 minutes GNSS outage
- no extern velocity

Max. drift effect (offset):

- Online ADMA data: **16.6 m** *(with a jump back to the reference at the end of the offset)*
- ADMA-PP combined: **2.4 m** *(Without position jump, but with offset building up in mid of the outage)*

2.2 With extern velocity:

- 2 minutes GNSS outage
- with extern velocity

Max. drift effect (offset):

- Online ADMA data: **3.7 m** *(with a jump back to the reference at the end of the offset)*
- ADMA-PP combined: **0.2 m** *(Without position jump, but with offset building up in mid of the outage)*

3. 5 MINUTES GNSS OUTAGE WITHOUT EXTERN VELOCITY:

3.1 Without extern velocity

- 5 minutes GNSS outage
- no extern velocity

Max. drift effect (offset):

- Online ADMA data: **87.9 m** *(with a jump back to the reference at the end of the offset)*
- ADMA-PP combined: **11.2 m** *(Without position jump, but with offset building up in mid of the outage)*

3.2 With extern velocity

- 5 minutes GNSS outage
- with extern velocity

Max. drift effect (offset):

- Online ADMA data: **24.5 m** *(with a jump back to the reference at the end of the offset)*
- ADMA-PP combined: **2.6 m** *(Without position jump, but with offset building up in mid of the outage)*