# MIKES
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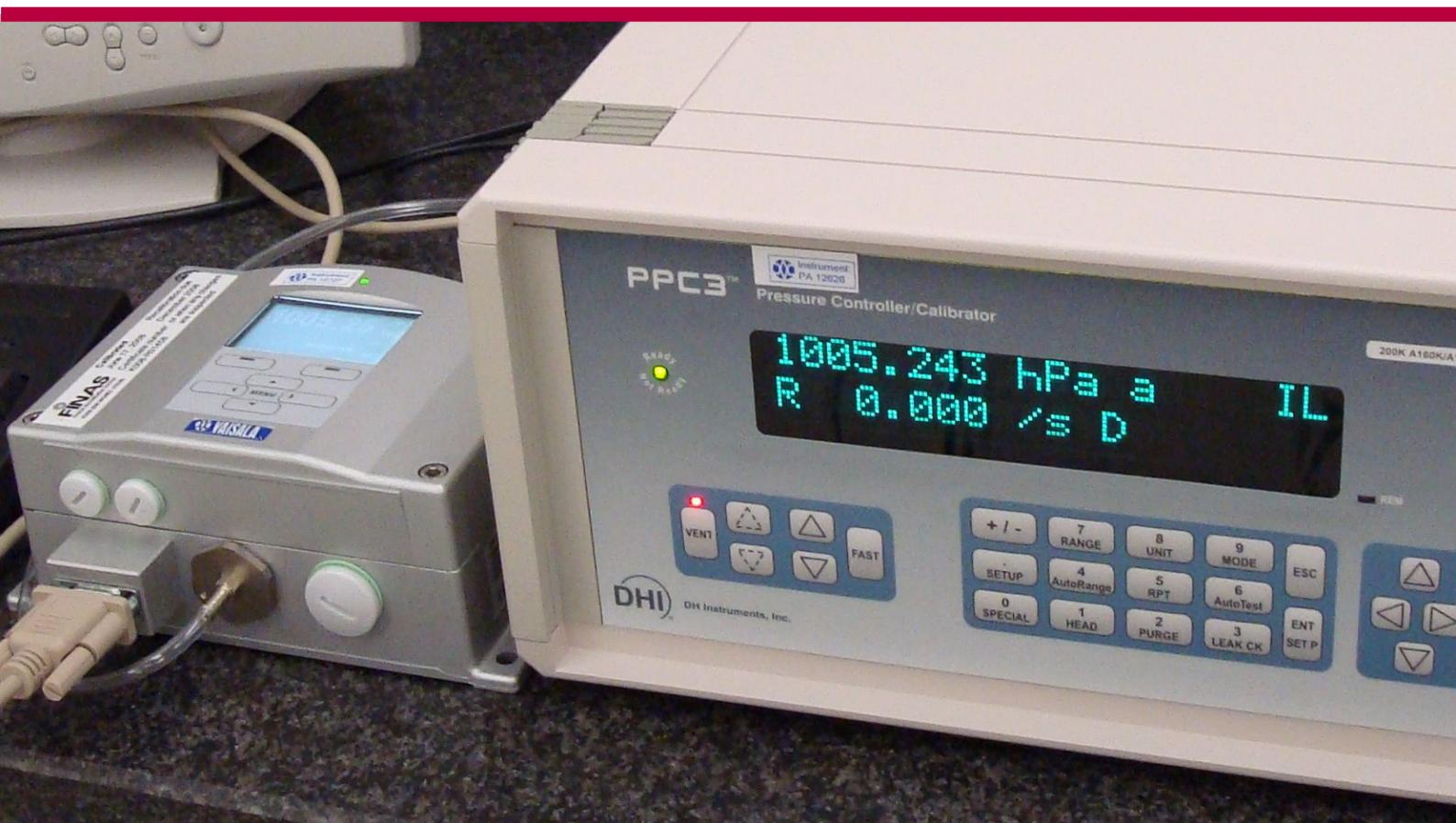
Barometric pressure comparisons between MIKES, Vaisala and LNE

Range 5 kPa to 130 kPa

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Mittatekniikan keskus

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Abstract

The pressure laboratories of Centre for Metrology and Accreditation (MIKES), Vaisala Oyj and Laboratoire national de métrologie et d'essais (LNE) compared their absolute pressures in the barometric range from 5 kPa to 130 kPa in 2007. Both MIKES and Vaisala were working on lower measurement uncertainties in this range.

Two transfer standards were used. The first one was a DH Instruments PPC3 pressure controller/calibrator with two absolute pressure ranges: low range from 0 to 110 kPa and high range from 0 to 160 kPa. The second transfer standard was a Vaisala PTB330 digital pressure transmitter for the range from 50 kPa to 110 kPa. The transfer standards were provided by Vaisala.

The stability of the transfer standards was assessed from the results of three subsequent calibrations at Vaisala. The drift rates of the high and low range in the DH Instruments PPC3 were low and predictable, allowing the transfer of pressures with a relative uncertainty of few parts per million. The PTB330 transmitter was not as stable as the PPC3.

The results from LNE were used as reference values in the comparison. LNE is one of the leading pressure laboratories in the world, and capable of very low uncertainties. The results of MIKES and Vaisala were corrected for drift, and the uncertainties of the drift corrections were introduced in the combined uncertainties. The agreement of the corrected results from MIKES and Vaisala with the uncorrected reference values of LNE was good.

The comparison results give a strong support to the planned lower uncertainties for MIKES and Vaisala.

Contents

Introduction

A pressure comparison in the barometric range between Vaisala Oyj, LNE and MIKES was arranged in autumn 2007. Vaisala Oyj is a well known manufacturer of barometers and other weather control instruments. Low measurement uncertainty and assessed quality are, of course, essential for their pressure laboratory. Inter-laboratory comparisons are an efficient method for calibration laboratories to prove their measurement capability, especially when laboratories are aiming at lower uncertainties.

1   Transfer standards

Two transfer standards were used. The first one was a DH Instruments PPC3 pressure controller/calibrator (serial number 723) and the second was a Vaisala PTB330 digital pressure transmitter (serial number B0000015).

The DHI PPC3 was equipped with two quartz reference pressure transducers (RPTs): High range from 0 to 160 kPa and Low range from 0 to 110 kPa. The RPTs were specially selected for low hysteresis by the manufacturer. The resolution of the PPC3 was 0,0001 kPa (or 0,001 hPa as the pressure unit chosen for the comparison was **hPa**).

The pressure range of Vaisala PTB330 covers the pressure range from 50 kPa to 110 kPa. The instrument uses three transducers that can be read separately but their average value was used in the comparison. The resolution was 0,001 hPa as hPa was selected as the unit for pressure.

2   Measurement instructions

The measurement instructions were prepared at Vaisala Oyj by Antero Pitkäkoski (Measurement protocol, dated 27.08.2007). Two sets of nominal pressures were specified:

Range 1 (50 hPa to 1300 hPa), to be measured with the High range of PPC3:
50 hPa, 100 hPa, 200 hPa, 400 hPa, 600 hPa, 800 hPa, 1000 hPa, 1200 hPa and 1300 hPa

Range 2 (500 hPa to 1100 hPa), to be measured with the Low range of PPC3 and PTB330:
500 hPa, 600 hPa, 700 hPa, 800 hPa, 900 hPa, 950 hPa, 1000 hPa, 1050 hPa and 1100 hPa.

The transmitting gas was specified as dry air or nitrogen.

For both measurement ranges a stabilisation time of 16 hours was specified, the mains power switched on and the pressure connection open to atmosphere. The pre-pressurisation stated for both measurement ranges was 5 minutes with the highest and the lowest nominal pressure.

At each nominal pressure, after the stabilisation, the readings of the transfer and reference standards were to be recorded ten times.

Two up-and-down pressure cycles were specified. The maximum pressure changing rate was set to 5 hPa/s.

The results were asked to be presented as average deviations and measurement uncertainties at each nominal pressure. This point, however, was modified later, and the results in decreasing and increasing directions were treated separately to eliminate the hysteresis effects on the uncertainties.

3   Measurements and the presentation of results

The measurements at Vaisala were carried out three times, and once at MIKES and at LNE according to the following schedule:

Vaisala (V1)	23. – 24.08.2007
MIKES	30.08. – 05.09.2007
Vaisala (V2)	07. – 10.09.2007
LNE	20. – 26.09.2007
Vaisala (V3)	01. – 02.11.2007

The results of Vaisala were reported in nine calibration certificates [1]. In the certificates the uncertainties were given only for the average values at each nominal pressure. The uncertainties separately for decreasing and increasing pressures were delivered on 03.12.2007 in an E-mail from Jouni Leskinen [2].

The results from MIKES were given in two calibration certificates [3].

The LNE results were presented in a detailed report by F. Goguel, J.-C. Legras and P. Otal. [4].

4 Stability control of the transfer standards and selection of reference values

The stability of the transfer standards was determined from the results of the three measurements at Vaisala. Some drift was observed on all the measured ranges. A linear time-dependent drift was assumed for simplicity. The drift rate at each nominal pressure was determined from the regression line fitted to the three Vaisala results. The increasing and decreasing pressures were treated separately.

The results from LNE were an obvious choice for reference values. LNE is a primary level pressure laboratory, and its uncertainties were the lowest.

For comparisons the results from MIKES and Vaisala were corrected with the drift rate to the date of the measurements at LNE. The uncertainties of the Vaisala and MIKES results were increased accordingly with the uncertainty of the line fitting. No corrections were applied on the LNE results and their uncertainties.

5 Reference standard of MIKES

The reference standard of MIKES used in this comparison was a DH Instruments PG7607 pressure balance s/n 397 equipped with a piston/cylinder assembly s/n 451. The effective area of the piston/cylinder unit, nominally 1960 mm^2, was determined with dimensional measurements at LNE in September – October 2007 (certificate H090649/1) and with pressure measurements at MIKES in July 2007 (certificate M-07P066v2). The pressure measurements of MIKES are traceable to LNE.

The 35 kg weight set DHI s/n 2229 used on the pressure balance was calibrated at MIKES in January 2007 (certificate M-07M009).

The reference vacuum in the DHI PG7607 was measured using a 10 torr MKS Baratron 690A vacuum gauge, calibrated on 16.09.2007 at MIKES.

6 Reference standard of Vaisala

The reference standard of Vaisala was a Ruska 2465 pressure balance equipped with the piston/cylinder assembly TL-453 and the weight set s/n 24978. Both the effective area of the piston/cylinder assembly and the masses of the weights are traceable to the National Institute of Standards and Technology (NIST), USA. The calibration results from NIST on more than 20 years time show a very good stability of the instrument, which is backed up by a similar Ruska pressure balance.

The reference vacuum of the Ruska balance was measured with a spinning rotor vacuum gauge MKS SRG-2CE s/n 20825G / 92026G, traceable to MIKES.

7 Reference standards of LNE

For the measurements in the range from 500 hPa to 1100 hPa LNE used their primary standard APX, developed with DH and equipped with the 1960 mm^2 effective area piston-cylinder assembly s/n 338 made by DHI. The effective area of the assembly has been determined from dimensional measurements of diameters, roundness and straightness. The uncertainty of the measured pressure is 0,2 Pa + 7,0 x 10^{-6} x p (k = 2, p in Pa).

In the range from 50 hPa to 1300 hPa the measurements were carried out with the DHI pressure balance type PG 7607 equipped with the 1960 mm^2 effective area piston-cylinder assembly s/n 114. The effective area of the assembly has been determined by direct comparison with the APX. The uncertainty of the measured pressure is 0,26 Pa + 8,0 x 10^{-6} x p (k = 2, p in Pa).

Some additional measurements in the range from 500 hPa to 1100 hPa were carried out with the fully automatic DHI pressure balance PG7601 equipped with the 980 mm^2 effective area piston-cylinder assembly s/n 246D. The effective area of the assembly has been determined by direct comparison to APX. The uncertainty of the measured pressure with this instrument is 0,3 Pa + 12 x 10^{-6} x p (k = 2, p in Pa).

8 Best measurement capabilities

At the time of the comparison (autumn 2007) the CMC value in the BIPM database for the barometric range of MIKES was 1 Pa + 2,5 x 10^{-5} x p (k = 2, p in Pa). This value is conservative and based on an older pressure balance.

The present MIKES reference standard in the barometric range is the DH Instruments PG7607 pressure balance equipped with the 1960 mm^2 piston/cylinder assembly s/n 451. The estimated uncertainty for this instrument is lower. The effective area is based on both dimensional measurements and direct pressure comparisons, and the measurement method of the reference vacuum has been improved. The target for future CMC value is 0,35 Pa + 1,3 x 10^{-5} x p, where p is pressure (k = 2, p in Pa). The main aim of MIKES in this comparison is to get a verification on this value.

The best measurement capability of Vaisala was 1,1 Pa + 1,5 x 10^{-5} x p in the barometric range at the time of the comparison (k = 2, p in Pa). This value was accredited by FINAS, the Finnish accreditation service. Based on lower uncertainty for the piston-cylinder effective area from NIST and improving stability data the new target value for Vaisala is estimated as 1,0 Pa + 0,5 x 10^{-5} x p (k = 2, p in Pa).

The CMC values of MIKES and Vaisala are illustrated in Figure 1. Additionally the values of LNE, NIST and PTB (Physikalisch-Technische Bundesanstalt, Germany) are included. The value of PTB, 0,2 Pa + 2,0 x 10^{-5} x p, seems to be very conservative compared to those of LNE, 0,2 Pa +0,7 x 10^{-5} x p, and NIST, $[(0,006 \text{ Pa})^2 + (0,52 \times 10^{-5} \times p)^2]^{1/2}$.

CMC uncertainties for absolute pressure
Range from 50 hPa to 1300 hPa
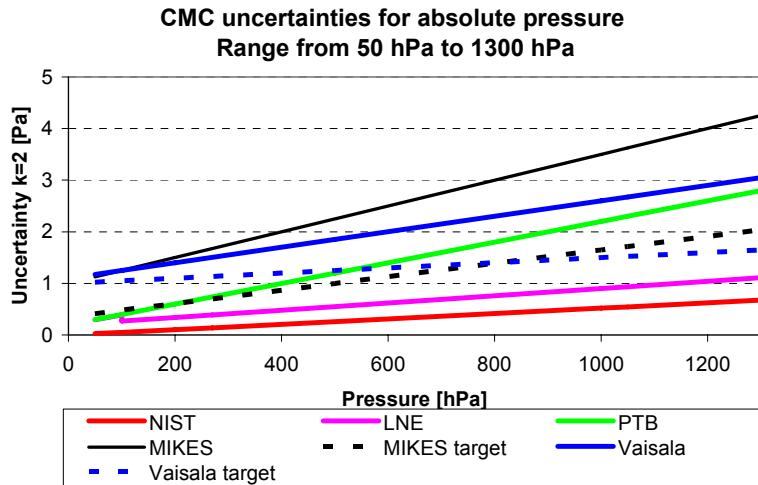
Figure 1. The target values of MIKES and Vaisala compared to the CMC values of NIST, LNE and PTB.

9   Measurement results on PPC3 High range

10.1 Drift correction

The results obtained on PPC3 High range are shown in the Result tables 1a to 1d in the Appendix. Further, the original results from Vaisala are illustrated in Figures 2 and 3.

Vaisala results on PPC3 High (down)
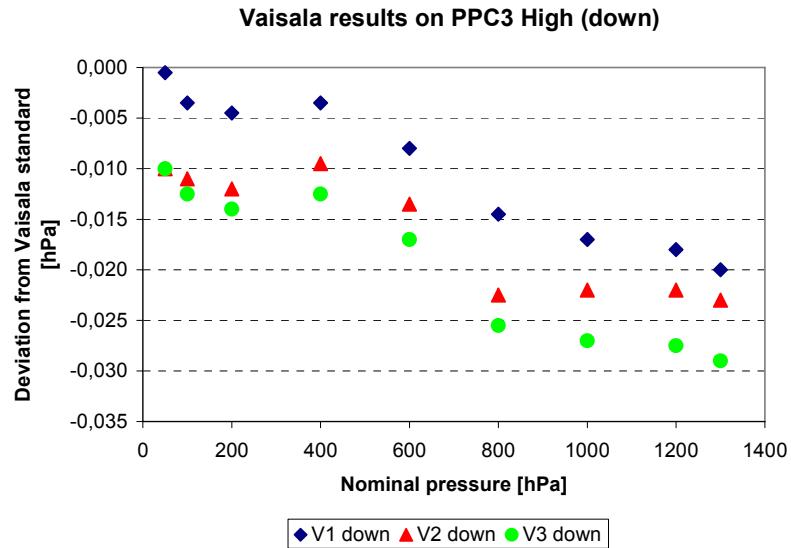
Figure 2. The original results from Vaisala on PPC3 High range for decreasing pressure.

Vaisala results on PPC3 High (up)
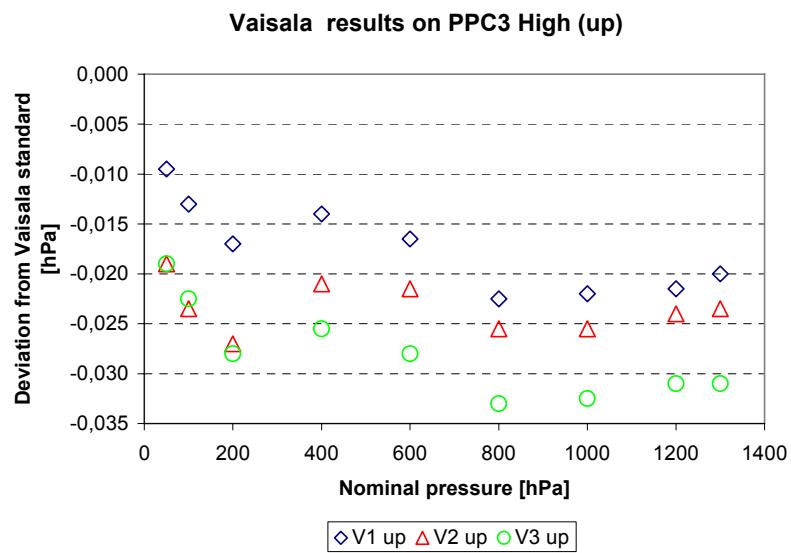
Figure 3. The original results from Vaisala on PPC3 High range for increasing pressure.

**Vaisala results V1, V2 and V3
at 400 hPa up on PPC3 High**

y = -0,00429x + 0,02141
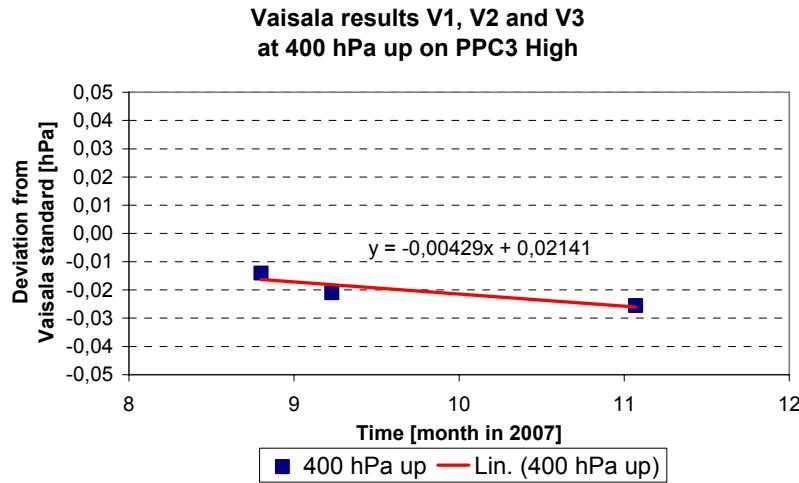
Figure 4. Determination of the drift rate on PPC3 High range at nominal pressure 400 hPa, increasing pressure.

Figure 4 shows an example on determination of the drift rate by fitting a straight line to the three results from Vaisala, measured at different times. The drift corrections at each nominal pressure are shown in the Result tables 1a to 1d in the Appendix. The observed drift rates range from -0,00278 hPa/month to -0,00462 hPa/month. The drift rate seems to depend on the nominal pressure, and also on the direction of the pressure change.

The Result tables 1a to 1d in the Appendix show also the drift corrected results from Vaisala and MIKES. Their original uncertainties were increased with the uncertainty of the drift correction, based on the calculated 2-s uncertainty of the line fitting. The results from LNE were used as reference values, without any corrections and with their original uncertainties.

Figure 5 illustrates the results before and after correction at 800 hPa down.

PPC3 High, 800 hPa down

y = -0,00389x + 0,01690
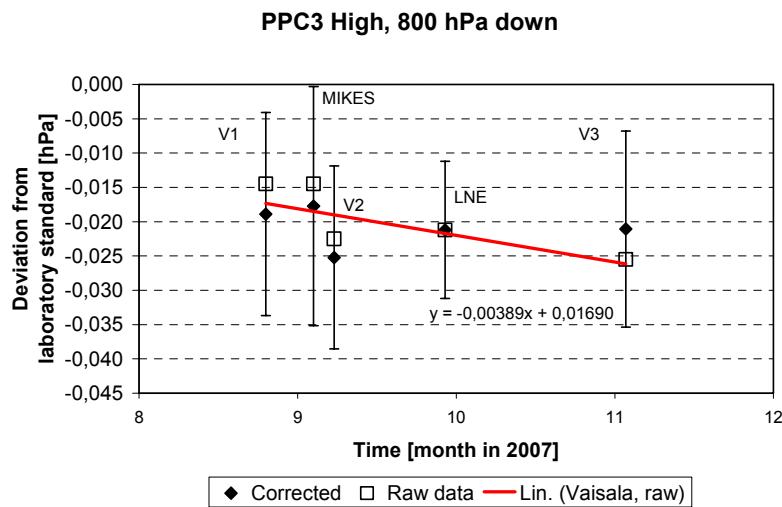
Figure 5. The results on PPC3 High range at nominal pressure 800 hPa, decreasing pressure, before and after corrections for drift.

10.2 Comparison to reference values

The deviations of the drift corrected results of Vaisala and MIKES from the LNE results are shown in Tables 1a to 1d in the Appendix. Figure 6 illustrates the drift corrected results of Vaisala V1 and MIKES as well as LNE for decreasing pressures.

PPC3 High range: Results at decreasing pressure
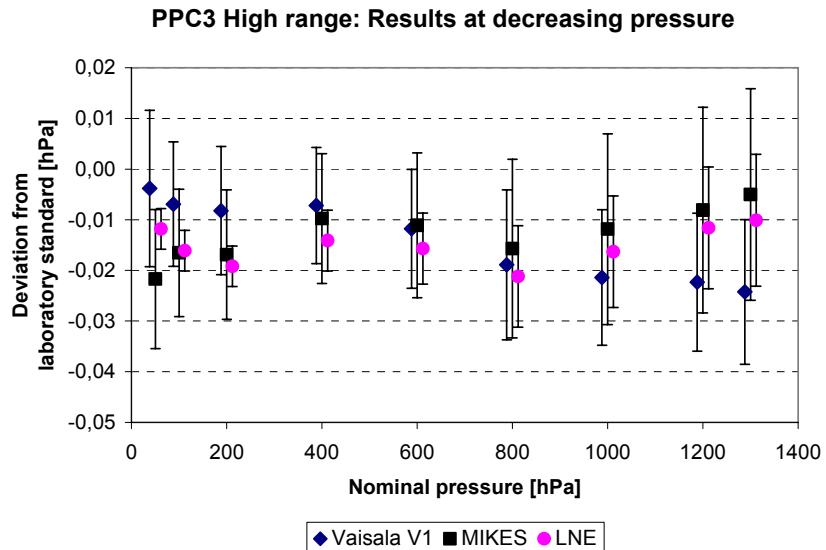
Figure 6. Drift corrected results on PPC3 High range, decreasing pressure.

A tool often used in analysing results from inter-laboratory comparisons is the normalised error E_n, which takes into account both the result and its uncertainty. The normalised error E_n for a pressure comparison is calculated as

$$E_n = \frac{\left(p_{transfer} - p_{std}\right)_{lab} - \left(p_{transfer} - p_{std}\right)_{ref}}{\sqrt{\left(U_{lab}^2 + U_{ref}^2\right)}}$$

where

$p_{transfer}$	is the pressure indicated by the transfer standard,
p_{std}	is the pressure of the laboratory standard,
U_{lab}	is the uncertainty of the laboratory result, and
U_{ref}	is the uncertainty of the reference value.

The result in an inter-laboratory comparison is regarded as correct within the limits of uncertainty, if the absolute value of the normalised error E_n is less than 1.

The normalised error values E_n for the drift corrected results on the PPC3 High range from Vaisala and MIKES are shown in the Result tables 1a to 1d in the Appendix, and illustrated in Figure 7. A summary of the E_n-values is presented in Table 1.

For all the Vaisala and MIKES results the normalised errors E_n lie between -1 and +1.

Transfer standard PPC3 High range, Reference values from LNE
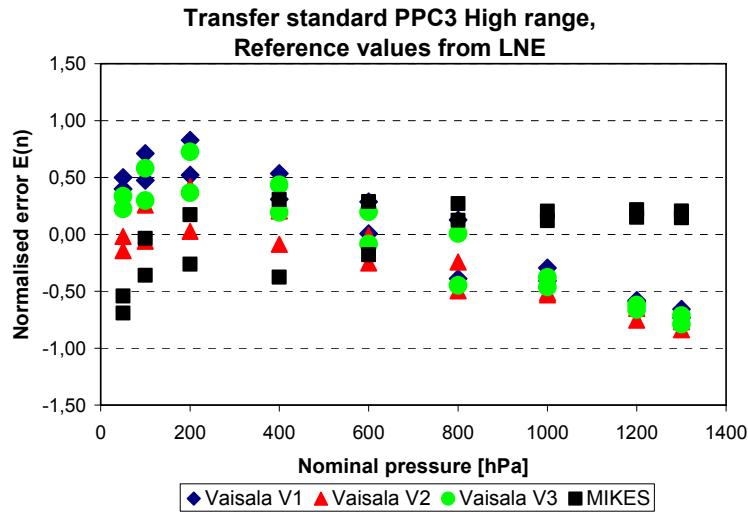
Figure 7. The normalised error values E_n for results of Vaisala and MIKES on PPC3 High range, on both decreasing and increasing pressures.

Table 1. Summary of normalised error values E_n on PPC3 High range.

Measurement	Range of E_n-values
Vaisala V1 down	-0,73 … +0,83
Vaisala V1 up	-0,66 … +0,52
Vaisala V2 down	-0,84 … +0,42
Vaisala V2 up	-0,77 … +0,03
Vaisala V3 down	-0,79 … +0,72
Vaisala V3 up	-0,71 … +0,37
MIKES down	-0,69 … +0,31
MIKES up	-0,54 … +0,22

10   Measurement results on PPC3 Low range

11.1 Drift correction

The results obtained on PPC3 Low range are shown in the Result tables 2a to 2d in the Appendix, and the results from Vaisala are illustrated in Figures 8 and 9.
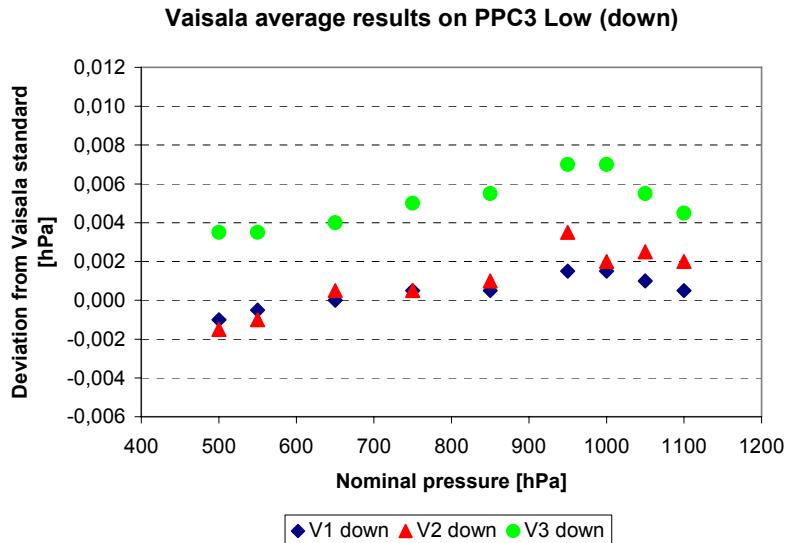
Figure 8. The original results from Vaisala on PPC3 Low range for decreasing pressure.
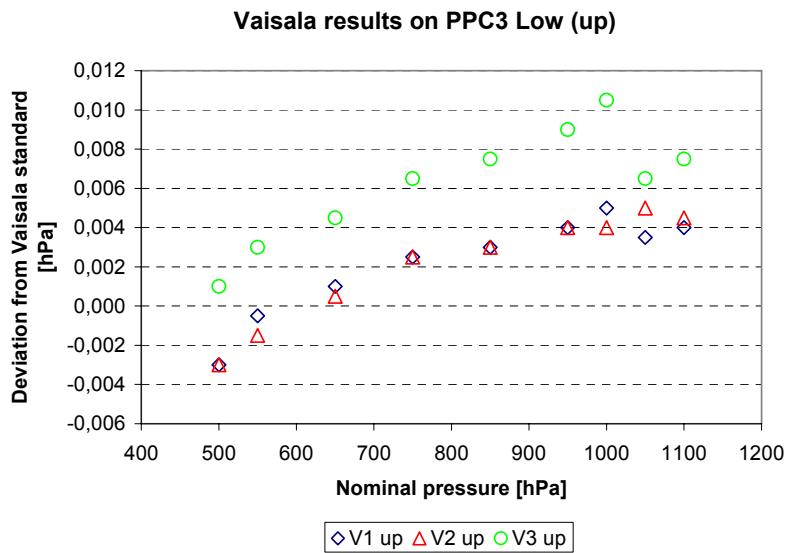
Figure 9. The original results from Vaisala on PPC3 Low range for increasing pressure.

Figure 10 shows an example on the determination of the drift rate by fitting a straight line to the three results from Vaisala, measured at different times. The drift corrections at each nominal pressure are shown in Result tables 2a to 2d in the Appendix. The observed drift rates range from 0,00122 hPa/month to 0,00276 hPa/month. In this case the linear time-dependent drift model is not very good as the changes from V1 to V2 are low compared to those between V2 and V3.

The Result tables 2a to 2d in the Appendix show also the drift corrected results from Vaisala and MIKES. As for the High range results, their original uncertainties were increased with the uncertainty of the drift correction, based on the calculated 2-s un-certainty of the line fitting. The results from LNE were used as reference values, without any corrections and with their original uncertainties.

Figure 11 illustrates the results before and after correction at 850 hPa down.

**Vaisala results V1, V2 and V3
at 750 hPa up on PPC3 Low**

$$y = 0.00191x - 0.01467$$
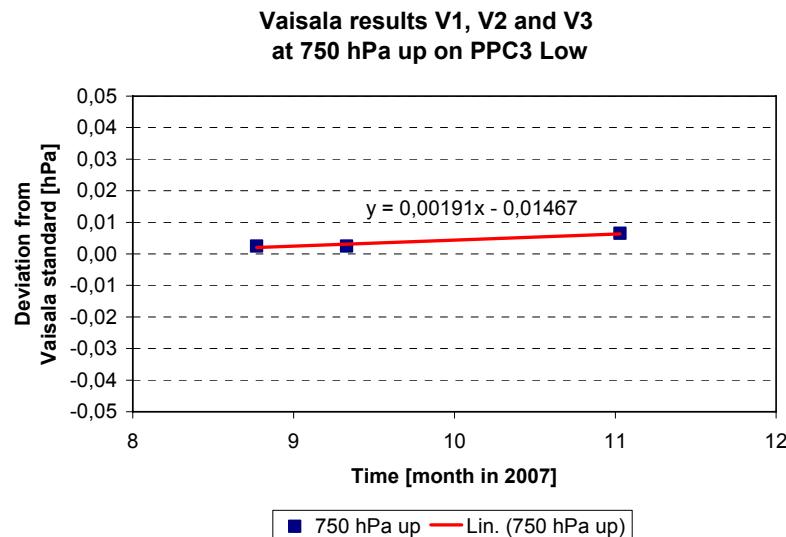
Figure 10. Determination of the drift rate on PPC3 Low range at nominal pres-sure 750 hPa, increasing pressure.

PPC3 Low, 850 hPa down

$$y = 0.00214x - 0.01832$$
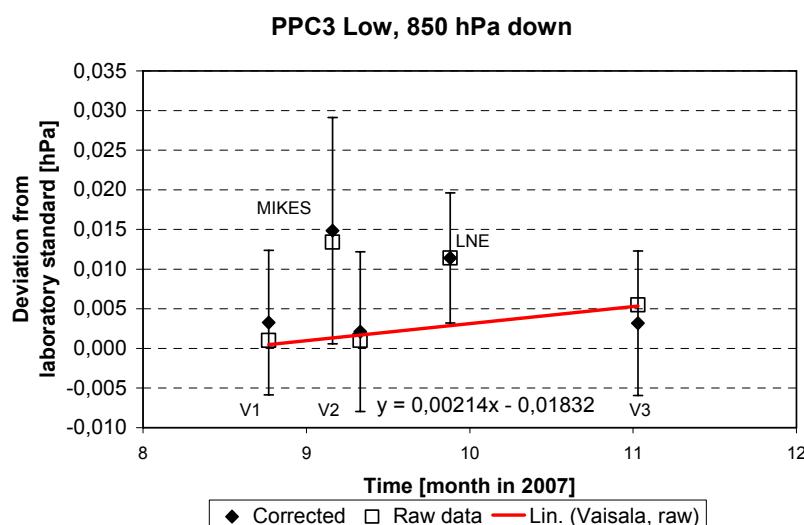
Figure 11. The results on PPC3 Low range at nominal pressure 850 hPa, de-creasing pressure, before and after corrections for drift.

11.2 Comparison to reference values

The deviations of the drift corrected results of Vaisala and MIKES from the LNE results are shown in the Result tables 2a to 2d in the Appendix. Figure 12 illustrates the drift corrected results from Vaisala V1, MIKES and LNE for decreasing pressures.

PPC3 Low range: Results at decreasing pressure
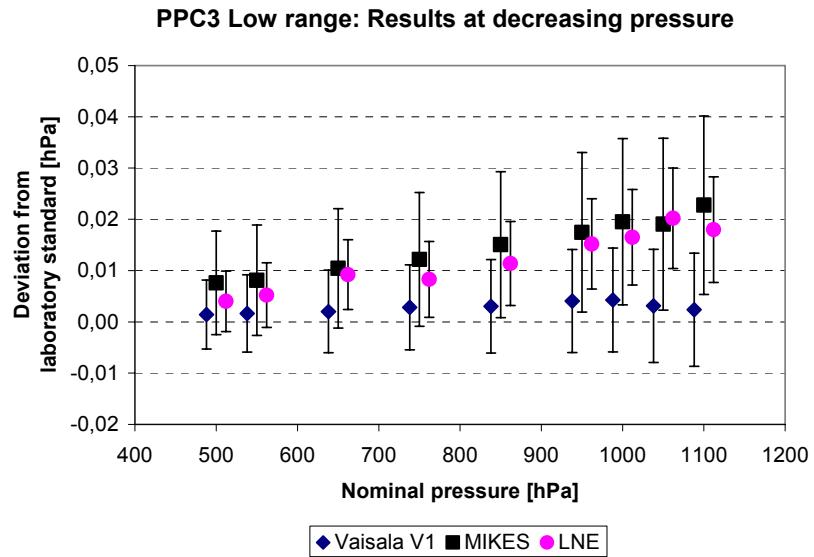
Figure 12. Drift corrected results on PPC3 Low range, decreasing pressure.

The normalised error values E_n were again calculated for the drift corrected results from Vaisala and MIKES. They are shown in the Result tables 2a to 2d in the Appendix, and illustrated in Figure 13. A summary of the E_n-values is presented in Table 2.
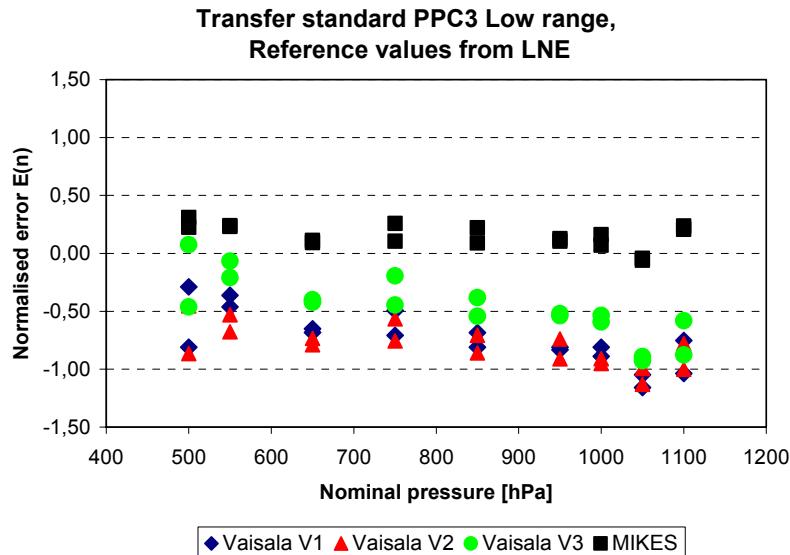
Figure 13. The normalised error values E_n for results of Vaisala and MIKES on PPC3 Low range.

Table 2. Summary of normalised error values E_n on PPC3 Low range.

Measurement	Range of E_n-values
Vaisala V1 down	-1,16 … -0,29
Vaisala V1 up	-1,05 … -0,46
Vaisala V2 down	-1,13 … -0,45
Vaisala V2 up	-0,99 … -0,68
Vaisala V3 down	-0,93 … +0,07
Vaisala V3 up	-0,89 … -0,21
MIKES down	-0,06 … +0,31
MIKES up	-0,04 … +0,24

For the Vaisala results there are five E_n absolute values below or equal to 1, at nominal pressures 1100 hPa and 1050 hPa down in the result sets V1 and V2, and at 1050 hPa up in the result set V1.

For MIKES results on PPC3 Low range all the E_n- values lie between -1 and +1.

11   Measurement results on PTB330

12.1 Drift correction

The results obtained on the Vaisala barometer PTB330 are shown in the Result tables 3a to 3d in the Appendix, and the results from Vaisala are illustrated in Figures 14 and 15.

Figure 16 shows again an example on determination of the drift rate by fitting a straight line to the three results from Vaisala measured at different times. The drift corrections at each nominal pressure are shown in the Result tables 3a to 3d in the Appendix. The observed drift rates range from 0,00970 hPa/month to 0,02233 hPa/month. The drift rate seems to be dependent on pressure. The linear time-dependent drift model is here not very good as the changes between V1 to V2 are low compared to those between V2 and V3.
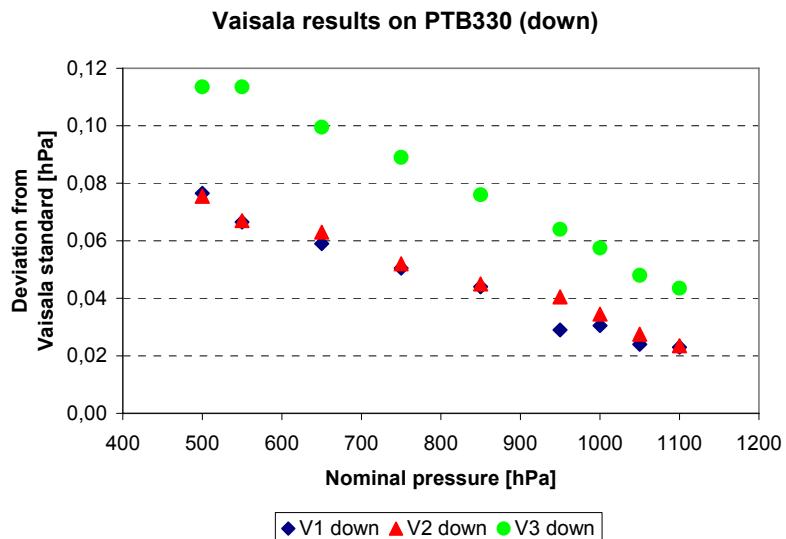
Figure 14. The original results from Vaisala on PTB330 for decreasing pressure.

Vaisala results on PTB330 (up)
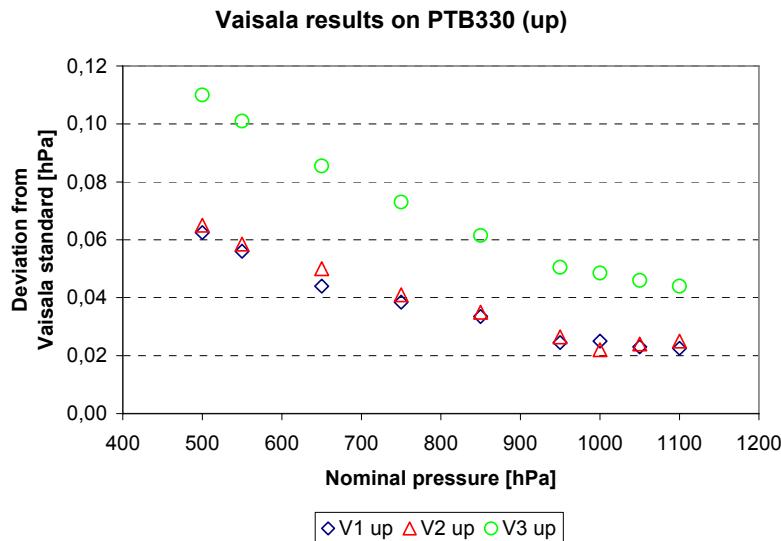
Figure 15. The original results from Vaisala on PTB330 for increasing pressure.

Vaisala results V1, V2 and V3 at 750 hPa down on PTB330

$y = 0,01814x - 0,11229$
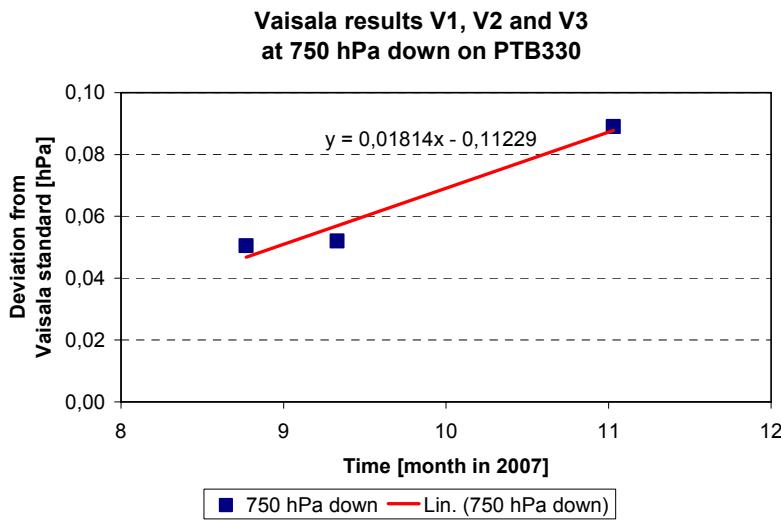
Figure 16. The determination of the drift rate on PTB330 at nominal pressure 750 hPa, decreasing pressure.

The Result tables 3a to 3d show also the drift corrected results from Vaisala and MIKES. As for the results on PPC3, the original uncertainties were increased with the uncertainty of the drift correction, based on the calculated 2-s uncertainty of the line fitting. The results from LNE were again used as reference values, without any corrections and with their original uncertainties.

Figure 17 illustrates the results before and after correction at 850 hPa down.

PTB330, 850 hPa down
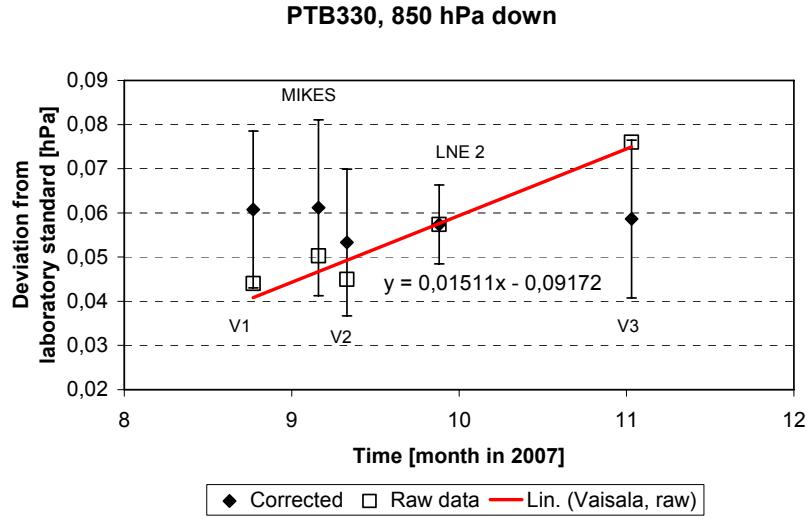
Figure 17. The results on PTB330 at nominal pressure 850 hPa, decreasing pressure, before and after corrections for drift.

12.2 Comparison to reference values

The deviations of the drift corrected results of Vaisala and MIKES from the LNE re-sults are shown in the Result tables 3a to 3d in the Appendix. The drift corrected re-sults from Vaisala V1, MIKES and LNE are illustrated in Figure 18.

PTB330: Results at decreasing pressure
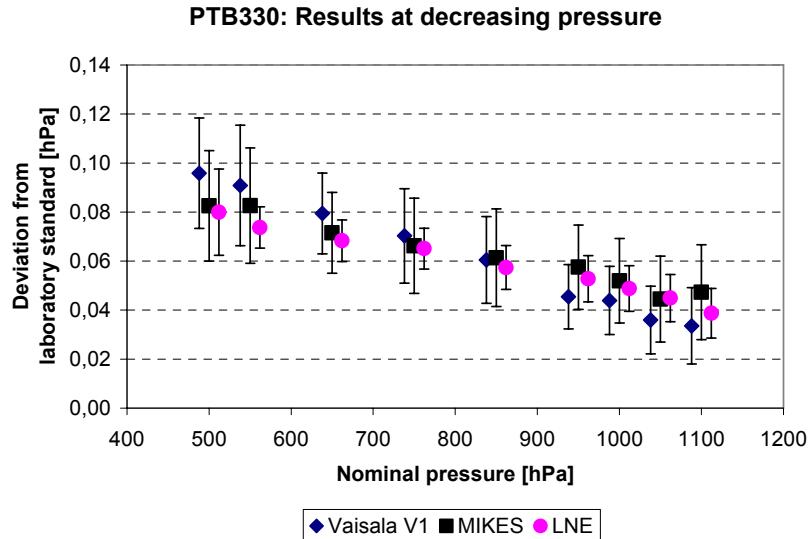
Figure 18. Drift corrected results on PTB330, decreasing pressure.

The normalised error values E_n were again calculated for the drift corrected PTB330 results from Vaisala and MIKES. They are shown in the Result tables 3a to 3d in the Appendix, and illustrated in Figure 19. A summary of the E_n-values is presented in Table 3.

Table 3. Summary of normalised error values E_n on PTB330.

Measurement	Range of E_n-values
Vaisala V1 down	-0,53 … +0,66
Vaisala V1 up	-0,35 … +0,42
Vaisala V2 down	-0,73 … +0,27
Vaisala V2 up	-0,69 … +0,03
Vaisala V3 down	-0,58 … +0,54
Vaisala V3 up	-0,44 … +0,29
MIKES down	-0,02 … +0,39
MIKES up	0,00 … +0,37
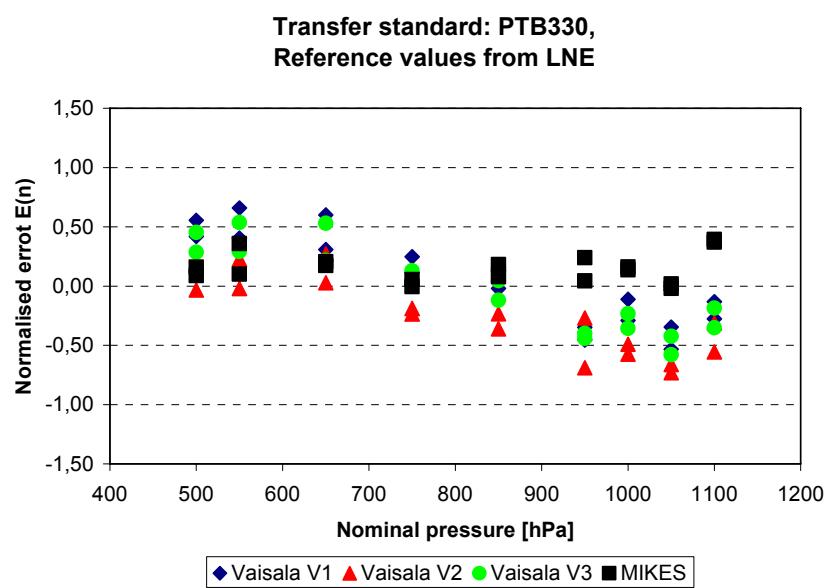
Fig. 19. Normalised error values E_n for results of Vaisala and MIKES on PTB330.

For all the results on PTB330 from Vaisala and MIKES the normalised errors E_n lie between -1 and +1.

12 Instability and intrinsic uncertainty of the transfer standards

The DHI PPC3 had on its both ranges a better stability than the Vaisala PTB330. Figure 20 illustrates their drift rates, determined as linear time dependent drift in hPa/month from the three measurements at Vaisala. The changes in the two ranges of the PPC3 were less than 0,005 hPa/month. Obviously most of the change consisted of zero drift. The changes found on the PTB330 were larger and dependent on pressure.

A linear time-dependent drift is a simplification as the transports probably cause more changes in the transfer standard than time only. Accordingly, the additional uncertainty as the uncertainty of the regression line is also a simplification.

Other sources of uncertainty were the scatter of the results, resolution of the transfer standard and the laboratory reference standard. Figures 21 to 23 illustrate the uncertainty of the results at each nominal pressure compared to the CMC values of LNE and the target values of MIKES and Vaisala.

The uncertainties given by LNE and MIKES to the results on PPC3 Low range are practically equal to the CMC or target, allowing very precise comparison of CMCs using normalised errors E_n. On PPC3 High range and PTB330 the uncertainties are higher at the low ends of the ranges and especially after the drift correction. Now the comparison of the results is not so directly the same as the comparison of CMC-values.

The uncertainties given by Vaisala are lower than their target CMC values at all nominal pressures. If the normalised errors E_n for the Vaisala results are recalculated using the target CMCs as their uncertainties, all the E_n -values would lie between -1 and + 1, as can be seen in the Result tables 4a to 6c in the Appendix.
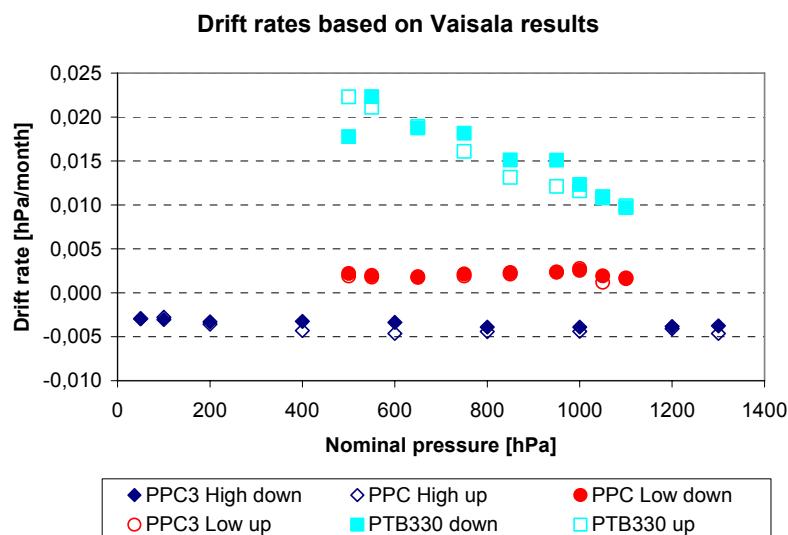
Figure 20. The drift rates on the two ranges of PPC3 and PTB330 calculated from the three measurements at Vaisala.

Uncertainties on PPC3 High range
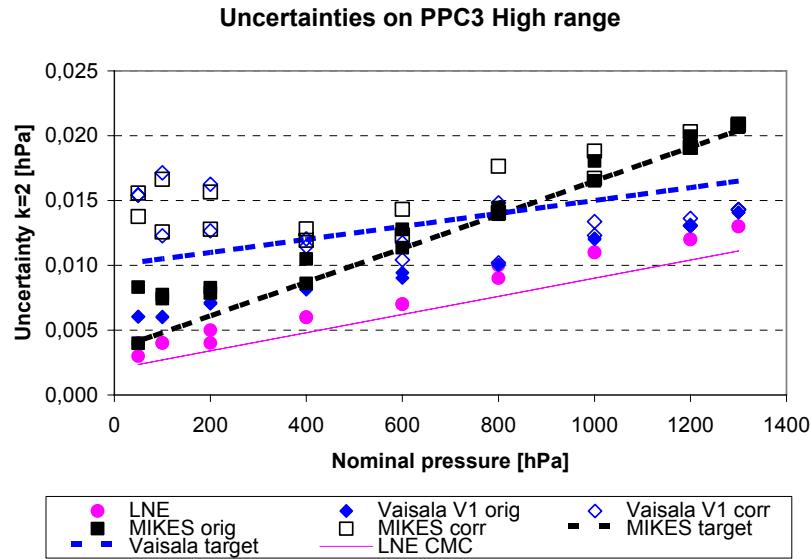
Figure 21. The measurement uncertainties on the results on PPC3 High range given by the laboratories, compared to the CMC values of LNE and the target values of MIKES and Vaisala.

Uncertainties on PPC3 Low range
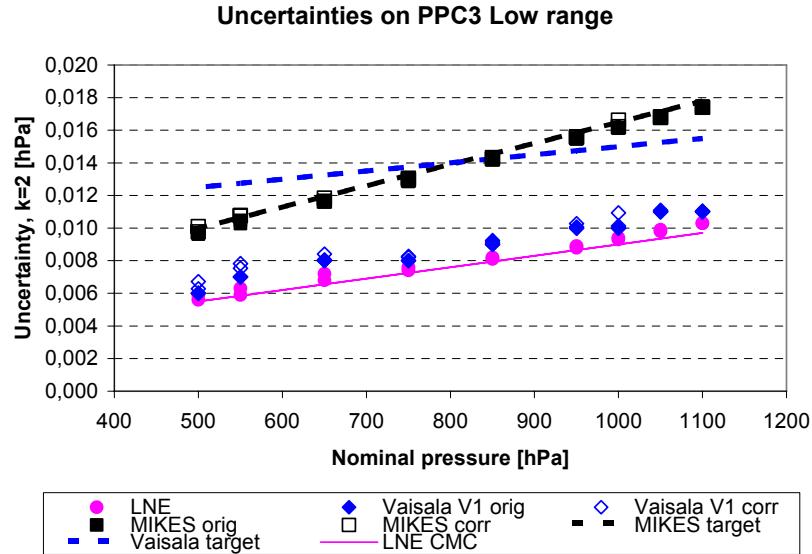
Figure. 22. The measurement uncertainties on the results on PPC3 Low range given by the laboratories, compared to the CMC values of LNE and the target values of MIKES and Vaisala.

Uncertainties on PTB330
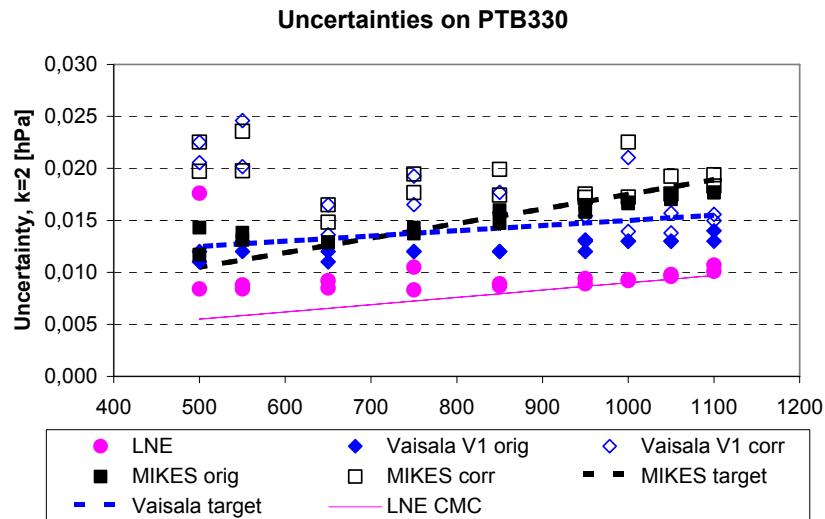
Figure 23. The measurement uncertainties on the results on PTB330 given by the laboratories, compared to the CMC values of LNE and the target values of MIKES and Vaisala.

13   Conclusions

After the drift correction a majority of the results from MIKES and Vaisala were in agreement with the uncorrected reference values from LNE.

For five of 54 Vaisala results obtained on the PPC3 Low range from 500 hPa to 1100 hPa the absolute value of the normalised error E_n was equal to or slightly higher than 1.

However, the uncertainties given by Vaisala are lower than their target CMC values at all nominal pressures. If the normalised errors E_n for the Vaisala results are recalculated using the planned new CMCs as their uncertainties, all the E_n -values would lie between -1 and + 1.

For all MIKES results on the PPC3 Low range from 500 hPa to 1100 hPa the values of the normalised errors E_n were between -1 and +1.

On the PPC3 High range from 50 hPa to 1300 hPa and on PTB330 from 500 hPa to 1100 hPa all Vaisala and MIKES results were in agreement with the reference values from LNE, but the uncertainties were higher than with the PPC3 Low range.

The comparison results give a strong support to the planned lower uncertainties for MIKES and Vaisala.

The transfer standard DHI PPC3 was found to be very stable, allowing the transfer of pressures with a relative uncertainty of a few parts per million.

14   References

[1]   Certificates of Calibration no. Q01611, Q01612, Q01613, Q01709, Q01710, Q01711, Q02065, Q02066 and Q020667. Vaisala Measurement Standards Laboratory, Vantaa 2007

[2]   MIKES-LNE-Vaisala Comparison Uncertainties.xls in E-mail 03.12.2007 from Jouni Leskinen, Measurement Standards Laboratory, Vaisala Oyj

[3]   Certificates of Calibration M-07P085 and M-07P086. Centre for Metrology and Accreditation, Espoo 2007

[4]   Goguel, Franck, Legras, Jean-Claude & Otal, Pierre: Comparison in the Absolute Pressure range from 5 kPa to 130 kPa. LNE Results. LNE File H080551, November 2007

APPENDIX: Results

Result table 1 a

PPC3 High range: Vaisala result set 1

Nominal pressure hPa	Reference values LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	Original Vaisala 1 result hPa	Original Vaisala 1 unc'ty hPa	Drift corr. Vaisala 1 result hPa	Drift corr. Vaisala 1 unc'ty hPa	Drift corr. deviation from LNE hPa	Drift corr. normalised error E_n
1300 down	-0,0101	0,013	-0,00376	-0,0200	0,0141	-0,0242	0,0143	-0,0141	-0,73
1200 down	-0,0116	0,012	-0,00383	-0,0180	0,0130	-0,0223	0,0136	-0,0107	-0,59
1000 down	-0,0163	0,011	-0,00390	-0,0170	0,0121	-0,0214	0,0134	-0,0051	-0,29
800 down	-0,0212	0,010	-0,00389	-0,0145	0,0100	-0,0189	0,0148	0,0023	0,13
600 down	-0,0157	0,007	-0,00335	-0,0080	0,0094	-0,0118	0,0117	0,0039	0,29
400 down	-0,0141	0,006	-0,00325	-0,0035	0,0083	-0,0072	0,0115	0,0069	0,54
200 down	-0,0192	0,004	-0,00328	-0,0045	0,0070	-0,0082	0,0126	0,0110	0,83
100 down	-0,0161	0,004	-0,00303	-0,0035	0,0060	-0,0069	0,0123	0,0092	0,71
50 down	-0,0118	0,004	-0,00294	-0,0005	0,0060	-0,0038	0,0154	0,0080	0,50
50 up	-0,0191	0,003	-0,00294	-0,0095	0,0060	-0,0128	0,0154	0,0063	0,40
100 up	-0,0245	0,004	-0,00278	-0,0130	0,0060	-0,0161	0,0171	0,0084	0,48
200 up	-0,0299	0,005	-0,00357	-0,0170	0,0071	-0,0210	0,0163	0,0089	0,52
400 up	-0,0230	0,006	-0,00429	-0,0140	0,0081	-0,0188	0,0120	0,0042	0,31
600 up	-0,0218	0,007	-0,00461	-0,0165	0,0090	-0,0217	0,0104	0,0001	0,01
800 up	-0,0222	0,009	-0,00440	-0,0225	0,0100	-0,0275	0,0102	-0,0053	-0,39
1000 up	-0,0202	0,011	-0,00438	-0,0220	0,0120	-0,0269	0,0123	-0,0067	-0,41
1200 up	-0,0158	0,012	-0,00407	-0,0215	0,0130	-0,0261	0,0131	-0,0103	-0,58
1300 up	-0,0125	0,013	-0,00462	-0,0200	0,0141	-0,0252	0,0143	-0,0127	-0,66

Result table 1 b

PPC3 High range: Vaisala result set 2

Nominal pressure hPa	Reference values LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	Original Vaisala 2 result hPa	Original Vaisala 2 unc'ty hPa	Drift corr. Vaisala 2 result hPa	Drift corr. Vaisala 2 unc'ty hPa	Drift corr. deviation from LNE hPa	Drift corr. normalised error E_n
1300 down	-0,0101	0,013	-0,00376	-0,0230	0,0131	-0,0256	0,0133	-0,0155	-0,84
1200 down	-0,0116	0,012	-0,00383	-0,0220	0,0120	-0,0247	0,0125	-0,0131	-0,75
1000 down	-0,0163	0,011	-0,00390	-0,0220	0,0111	-0,0247	0,0122	-0,0084	-0,51
800 down	-0,0212	0,010	-0,00389	-0,0225	0,0090	-0,0252	0,0133	-0,0040	-0,24
600 down	-0,0157	0,007	-0,00335	-0,0135	0,0083	-0,0158	0,0104	-0,0001	-0,01
400 down	-0,0141	0,006	-0,00325	-0,0095	0,0064	-0,0118	0,0096	0,0023	0,21
200 down	-0,0192	0,004	-0,00328	-0,0120	0,0057	-0,0143	0,0111	0,0049	0,42
100 down	-0,0161	0,004	-0,00303	-0,0110	0,0049	-0,0131	0,0108	0,0030	0,26
50 down	-0,0118	0,004	-0,00294	-0,0100	0,0042	-0,0121	0,0135	-0,0003	-0,02
50 up	-0,0191	0,003	-0,00294	-0,0190	0,0040	-0,0211	0,0134	-0,0020	-0,14
100 up	-0,0245	0,004	-0,00278	-0,0235	0,0050	-0,0254	0,0153	-0,0009	-0,06
200 up	-0,0299	0,005	-0,00357	-0,0270	0,0052	-0,0295	0,0141	0,0004	0,03
400 up	-0,0230	0,006	-0,00429	-0,0210	0,0060	-0,0240	0,0100	-0,0010	-0,09
600 up	-0,0218	0,007	-0,00461	-0,0215	0,0080	-0,0247	0,0093	-0,0029	-0,25
800 up	-0,0222	0,009	-0,00440	-0,0255	0,0090	-0,0286	0,0092	-0,0064	-0,50
1000 up	-0,0202	0,011	-0,00438	-0,0255	0,0110	-0,0286	0,0113	-0,0084	-0,53
1200 up	-0,0158	0,012	-0,00407	-0,0240	0,0120	-0,0268	0,0121	-0,0110	-0,65
1300 up	-0,0125	0,013	-0,00462	-0,0235	0,0130	-0,0267	0,0132	-0,0142	-0,77

Result table 1 c

PPC3 High range: Vaisala result set 3

Nominal pressure hPa		Reference values LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	Original Vaisala 3 result hPa	Original Vaisala 3 unc'ty hPa	Drift corr. Vaisala 3 result hPa	Drift corr. Vaisala 3 unc'ty hPa	Drift corr. deviation from LNE hPa	Drift corr. normalised error E_n
1300	down	-0,0101	0,013	-0,00376	-0,0290	0,0130	-0,0247	0,0132	-0,0146	-0,79
1200	down	-0,0116	0,012	-0,00383	-0,0275	0,0120	-0,0231	0,0127	-0,0115	-0,66
1000	down	-0,0163	0,011	-0,00390	-0,0270	0,0110	-0,0226	0,0124	-0,0063	-0,38
800	down	-0,0212	0,010	-0,00389	-0,0255	0,0092	-0,0211	0,0143	0,0001	0,01
600	down	-0,0157	0,007	-0,00335	-0,0170	0,0080	-0,0132	0,0106	0,0025	0,20
400	down	-0,0141	0,006	-0,00325	-0,0125	0,0070	-0,0088	0,0106	0,0053	0,44
200	down	-0,0192	0,004	-0,00328	-0,0140	0,0050	-0,0103	0,0117	0,0089	0,72
100	down	-0,0161	0,004	-0,00303	-0,0125	0,0041	-0,0090	0,0115	0,0071	0,58
50	down	-0,0118	0,004	-0,00294	-0,0100	0,0040	-0,0066	0,0148	0,0052	0,34
50	up	-0,0191	0,003	-0,00294	-0,0190	0,0050	-0,0156	0,0151	0,0035	0,22
100	up	-0,0245	0,004	-0,00278	-0,0225	0,0050	-0,0193	0,0169	0,0052	0,30
200	up	-0,0299	0,005	-0,00357	-0,0280	0,0050	-0,0239	0,0155	0,0060	0,37
400	up	-0,0230	0,006	-0,00429	-0,0255	0,0060	-0,0206	0,0108	0,0024	0,19
600	up	-0,0218	0,007	-0,00461	-0,0280	0,0070	-0,0227	0,0087	-0,0009	-0,08
800	up	-0,0222	0,009	-0,00440	-0,0330	0,0091	-0,0280	0,0093	-0,0058	-0,45
1000	up	-0,0202	0,011	-0,00438	-0,0325	0,0110	-0,0275	0,0114	-0,0073	-0,46
1200	up	-0,0158	0,012	-0,00407	-0,0310	0,0120	-0,0264	0,0121	-0,0106	-0,62
1300	up	-0,0125	0,013	-0,00462	-0,0310	0,0130	-0,0257	0,0133	-0,0132	-0,71

Result table 1 d

PPC3 High range: MIKES results

Nominal pressure hPa		Reference values LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	Original MIKES result hPa	Original MIKES unc'ty hPa	Drift corr. MIKES result hPa	Drift corr. MIKES unc'ty hPa	Drift corr. deviation from LNE hPa	Drift corr. normalised error E_n
1300	down	-0,0101	0,013	-0,00376	-0,0019	0,0208	-0,0050	0,0209	0,0051	0,21
1200	down	-0,0116	0,012	-0,00383	-0,0049	0,0199	-0,0081	0,0203	0,0035	0,15
1000	down	-0,0163	0,011	-0,00390	-0,0086	0,0180	-0,0119	0,0188	0,0044	0,20
800	down	-0,0212	0,010	-0,00389	-0,0125	0,0145	-0,0157	0,0176	0,0055	0,27
600	down	-0,0157	0,007	-0,00335	-0,0083	0,0128	-0,0111	0,0143	0,0046	0,29
400	down	-0,0141	0,006	-0,00325	-0,0071	0,0105	-0,0098	0,0128	0,0043	0,31
200	down	-0,0192	0,004	-0,00328	-0,0142	0,0083	-0,0169	0,0128	0,0023	0,17
100	down	-0,0161	0,004	-0,00303	-0,0140	0,0077	-0,0165	0,0126	-0,0004	-0,03
50	down	-0,0118	0,004	-0,00294	-0,0193	0,0040	-0,0217	0,0138	-0,0099	-0,69
50	up	-0,0191	0,003	-0,00294	-0,0253	0,0083	-0,0277	0,0156	-0,0086	-0,54
100	up	-0,0245	0,004	-0,00278	-0,0283	0,0074	-0,0306	0,0166	-0,0061	-0,36
200	up	-0,0299	0,005	-0,00357	-0,0313	0,0079	-0,0342	0,0157	-0,0043	-0,26
400	up	-0,0230	0,006	-0,00429	-0,0244	0,0086	-0,0280	0,0119	-0,0050	-0,37
600	up	-0,0218	0,007	-0,00461	-0,0205	0,0113	-0,0243	0,0123	-0,0025	-0,18
800	up	-0,0222	0,009	-0,00440	-0,0165	0,0139	-0,0201	0,0141	0,0021	0,13
1000	up	-0,0202	0,011	-0,00438	-0,0141	0,0165	-0,0178	0,0167	0,0024	0,12
1200	up	-0,0158	0,012	-0,00407	-0,0075	0,0191	-0,0109	0,0191	0,0049	0,22
1300	up	-0,0125	0,013	-0,00462	-0,0051	0,0207	-0,0089	0,0208	0,0036	0,15

Result table 2 a

PPC3 Low range: Vaisala result set 1

Nominal pressure hPa		Reference values LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	Original Vaisala 1 result hPa	Original Vaisala 1 unc'ty hPa	Drift corr. Vaisala 1 result hPa	Drift corr. Vaisala 1 unc'ty hPa	Drift corr. deviation from LNE hPa	Drift corr. normalised error E_n
1100	down	0,0180	0,0103	0,00170	0,0005	0,011	0,0024	0,0110	-0,0156	**-1,04**
1050	down	0,0202	0,0098	0,00194	0,0010	0,011	0,0031	0,0110	-0,0171	**-1,16**
1000	down	0,0165	0,0093	0,00255	0,0015	0,010	0,0043	0,0101	-0,0122	-0,89
950	down	0,0152	0,0088	0,00235	0,0015	0,010	0,0041	0,0101	-0,0111	-0,83
850	down	0,0114	0,0082	0,00231	0,0005	0,009	0,0030	0,0091	-0,0084	-0,68
750	down	0,0083	0,0074	0,00214	0,0005	0,008	0,0028	0,0083	-0,0055	-0,49
650	down	0,0092	0,0068	0,00184	0,0000	0,008	0,0020	0,0081	-0,0072	-0,68
550	down	0,0052	0,0063	0,00197	-0,0005	0,007	0,0016	0,0075	-0,0036	-0,36
500	down	0,0040	0,0059	0,00221	-0,0010	0,006	0,0014	0,0067	-0,0026	-0,29
500	up	0,0059	0,0056	0,00191	-0,0030	0,006	-0,0009	0,0063	-0,0068	-0,81
550	up	0,0060	0,0059	0,00180	-0,0005	0,007	0,0015	0,0078	-0,0045	-0,46
650	up	0,0101	0,0072	0,00174	0,0010	0,008	0,0029	0,0084	-0,0072	-0,65
750	up	0,0125	0,0076	0,00191	0,0025	0,008	0,0046	0,0082	-0,0079	-0,71
850	up	0,0153	0,0081	0,00214	0,0030	0,009	0,0053	0,0092	-0,0100	-0,81
950	up	0,0176	0,0089	0,00238	0,0040	0,010	0,0066	0,0103	-0,0110	-0,81
1000	up	0,0197	0,0094	0,00276	0,0050	0,010	0,0080	0,0109	-0,0117	-0,81
1050	up	0,0204	0,0099	0,00122	0,0035	0,011	0,0048	0,0111	-0,0156	**-1,05**
1100	up	0,0171	0,0103	0,00160	0,0040	0,011	0,0057	0,0110	-0,0114	-0,75

Result table 2 b

PPC3 Low range: Vaisala result set 2

Nominal pressure hPa		Reference values LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	Original Vaisala 2 result hPa	Original Vaisala 2 unc'ty hPa	Drift corr. Vaisala 2 result hPa	Drift corr. Vaisala 2 unc'ty hPa	Drift corr. deviation from LNE hPa	Drift corr. normalised error E_n
1100	down	0,0180	0,0103	0,00170	0,0020	0,0110	0,0029	0,0110	-0,0151	**-1,00**
1050	down	0,0202	0,0098	0,00194	0,0025	0,0110	0,0035	0,0110	-0,0167	**-1,13**
1000	down	0,0165	0,0093	0,00255	0,0020	0,0110	0,0034	0,0111	-0,0131	-0,91
950	down	0,0152	0,0088	0,00235	0,0035	0,0110	0,0047	0,0110	-0,0105	-0,74
850	down	0,0114	0,0082	0,00231	0,0010	0,0100	0,0022	0,0101	-0,0092	-0,71
750	down	0,0083	0,0074	0,00214	0,0005	0,0090	0,0016	0,0092	-0,0067	-0,57
650	down	0,0092	0,0068	0,00184	0,0005	0,0080	0,0015	0,0080	-0,0077	-0,73
550	down	0,0052	0,0063	0,00197	-0,0010	0,0070	0,0000	0,0074	-0,0052	-0,53
500	down	0,0040	0,0059	0,00221	-0,0015	0,0070	-0,0003	0,0075	-0,0043	-0,45
500	up	0,0059	0,0056	0,00191	-0,0030	0,0070	-0,0020	0,0072	-0,0079	-0,87
550	up	0,0060	0,0059	0,00180	-0,0015	0,0070	-0,0005	0,0076	-0,0065	-0,68
650	up	0,0101	0,0072	0,00174	0,0005	0,0080	0,0014	0,0083	-0,0087	-0,79
750	up	0,0125	0,0076	0,00191	0,0025	0,0090	0,0035	0,0091	-0,0090	-0,76
850	up	0,0153	0,0081	0,00214	0,0030	0,0100	0,0041	0,0102	-0,0112	-0,86
950	up	0,0176	0,0089	0,00238	0,0040	0,0100	0,0053	0,0102	-0,0123	-0,91
1000	up	0,0197	0,0094	0,00276	0,0040	0,0110	0,0055	0,0117	-0,0142	-0,95
1050	up	0,0204	0,0099	0,00122	0,0050	0,0110	0,0056	0,0111	-0,0148	-0,99
1100	up	0,0171	0,0103	0,00160	0,0045	0,0110	0,0053	0,0110	-0,0118	-0,78

Result table 2 c

PPC3 Low range: Vaisala result set 3

Nominal pressure hPa	Reference values LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	Original Vaisala 3 result hPa	Original Vaisala 3 unc'ty hPa	Drift corr. Vaisala 3 result hPa	Drift corr. Vaisala 3 unc'ty hPa	Drift corr. deviation from LNE hPa	Drift corr. normalised error E_n
1100 down	0,0180	0,0103	0,00170	0,0045	0,0100	0,0054	0,0100	-0,0126	-0,88
1050 down	0,0202	0,0098	0,00194	0,0055	0,0110	0,0065	0,0110	-0,0137	-0,93
1000 down	0,0165	0,0093	0,00255	0,0070	0,0100	0,0084	0,0101	-0,0081	-0,59
950 down	0,0152	0,0088	0,00235	0,0070	0,0100	0,0082	0,0101	-0,0070	-0,52
850 down	0,0114	0,0082	0,00231	0,0055	0,0090	0,0067	0,0091	-0,0047	-0,38
750 down	0,0083	0,0074	0,00214	0,0050	0,0080	0,0061	0,0083	-0,0022	-0,20
650 down	0,0092	0,0068	0,00184	0,0040	0,0080	0,0050	0,0081	-0,0042	-0,40
550 down	0,0052	0,0063	0,00197	0,0035	0,0070	0,0045	0,0076	-0,0007	-0,07
500 down	0,0040	0,0059	0,00221	0,0035	0,0060	0,0047	0,0068	0,0007	0,07
500 up	0,0059	0,0056	0,00191	0,0010	0,0060	0,0020	0,0063	-0,0039	-0,46
550 up	0,0060	0,0059	0,00180	0,0030	0,0070	0,0040	0,0079	-0,0020	-0,21
650 up	0,0101	0,0072	0,00174	0,0045	0,0080	0,0054	0,0084	-0,0047	-0,42
750 up	0,0125	0,0076	0,00191	0,0065	0,0080	0,0075	0,0082	-0,0050	-0,45
850 up	0,0153	0,0081	0,00214	0,0075	0,0090	0,0086	0,0093	-0,0067	-0,54
950 up	0,0176	0,0089	0,00238	0,0090	0,0100	0,0103	0,0103	-0,0073	-0,54
1000 up	0,0197	0,0094	0,00276	0,0105	0,0100	0,0120	0,0110	-0,0077	-0,54
1050 up	0,0204	0,0099	0,00122	0,0065	0,0110	0,0071	0,0111	-0,0133	-0,89
1100 up	0,0171	0,0103	0,00160	0,0075	0,0110	0,0083	0,0110	-0,0088	-0,58

Result table 2 d

PPC3 Low range: MIKES results

Nominal pressure hPa	Reference values LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	Original MIKES result hPa	Original MIKES unc'ty hPa	Drift corr. MIKES result hPa	Drift corr. MIKES unc'ty hPa	Drift corr. deviation from LNE hPa	Drift corr. normalised error E_n
1100 down	0,0180	0,0103	0,00170	0,0215	0,0174	0,0228	0,0174	0,0048	0,24
1050 down	0,0202	0,0098	0,00194	0,0176	0,0168	0,0191	0,0168	-0,0011	-0,06
1000 down	0,0165	0,0093	0,00255	0,0177	0,0161	0,0195	0,0162	0,0030	0,16
950 down	0,0152	0,0088	0,00235	0,0158	0,0155	0,0175	0,0156	0,0023	0,13
850 down	0,0114	0,0082	0,00231	0,0134	0,0142	0,0150	0,0142	0,0036	0,22
750 down	0,0083	0,0074	0,00214	0,0106	0,0129	0,0122	0,0131	0,0039	0,26
650 down	0,0092	0,0068	0,00184	0,0091	0,0116	0,0104	0,0116	0,0012	0,09
550 down	0,0052	0,0063	0,00197	0,0067	0,0105	0,0081	0,0108	0,0029	0,23
500 down	0,0040	0,0059	0,00221	0,0060	0,0097	0,0076	0,0101	0,0036	0,31
500 up	0,0059	0,0056	0,00191	0,0070	0,0096	0,0084	0,0098	0,0025	0,23
550 up	0,0060	0,0059	0,00180	0,0076	0,0103	0,0090	0,0108	0,0030	0,24
650 up	0,0101	0,0072	0,00174	0,0104	0,0116	0,0117	0,0118	0,0016	0,11
750 up	0,0125	0,0076	0,00191	0,0127	0,0128	0,0141	0,0130	0,0016	0,10
850 up	0,0153	0,0081	0,00214	0,0152	0,0142	0,0168	0,0143	0,0015	0,09
950 up	0,0176	0,0089	0,00238	0,0178	0,0155	0,0195	0,0156	0,0019	0,11
1000 up	0,0197	0,0094	0,00276	0,0190	0,0161	0,0210	0,0166	0,0013	0,07
1050 up	0,0204	0,0099	0,00122	0,0187	0,0168	0,0196	0,0168	-0,0008	-0,04
1100 up	0,0171	0,0103	0,00160	0,0201	0,0174	0,0213	0,0174	0,0042	0,21

Result table 3 a

PTB330: Vaisala result set 1

Nominal pressure hPa	Reference values LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	Original Vaisala 1 result hPa	Original Vaisala 1 unc'ty hPa	Drift corr. Vaisala 1 result hPa	Drift corr. Vaisala 1 unc'ty hPa	Drift corr. deviation from LNE hPa	Drift corr. normalised error E_n
1100 down	0,0387	0,0101	0,00970	0,0230	0,013	0,0336	0,0156	-0,0051	-0,28
1050 down	0,0449	0,0096	0,01096	0,0240	0,013	0,0359	0,0138	-0,0090	-0,53
1000 down	0,0488	0,0093	0,01232	0,0305	0,013	0,0439	0,0139	-0,0049	-0,29
950 down	0,0528	0,0094	0,01510	0,0290	0,012	0,0455	0,0131	-0,0073	-0,45
850 down	0,0574	0,0089	0,01511	0,0440	0,012	0,0605	0,0177	0,0031	0,16
750 down	0,0651	0,0083	0,01814	0,0505	0,012	0,0703	0,0193	0,0052	0,25
650 down	0,0683	0,0085	0,01875	0,0590	0,012	0,0794	0,0165	0,0111	0,60
550 down	0,0737	0,0084	0,02233	0,0665	0,013	0,0908	0,0246	0,0171	0,66
500 down	0,0800	0,0176	0,01777	0,0765	0,012	0,0959	0,0225	0,0159	0,56
500 up	0,0775	0,0084	0,02229	0,0625	0,011	0,0868	0,0206	0,0093	0,42
550 up	0,0701	0,0088	0,02110	0,0560	0,012	0,0790	0,0202	0,0089	0,40
650 up	0,0596	0,0092	0,01895	0,0440	0,011	0,0647	0,0136	0,0051	0,31
750 up	0,0538	0,0105	0,01610	0,0385	0,012	0,0560	0,0165	0,0022	0,11
850 up	0,0482	0,0087	0,01314	0,0335	0,012	0,0478	0,0157	-0,0004	-0,02
950 up	0,0439	0,0089	0,01211	0,0245	0,013	0,0377	0,0154	-0,0062	-0,35
1000 up	0,0402	0,0092	0,01161	0,0250	0,013	0,0377	0,0210	-0,0025	-0,11
1050 up	0,0412	0,0098	0,01082	0,0230	0,013	0,0348	0,0157	-0,0064	-0,35
1100 up	0,0357	0,0107	0,00990	0,0225	0,014	0,0333	0,0150	-0,0024	-0,13

Result table 3 b

PTB330: Vaisala result set 2

Nominal pressure hPa	Reference values LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	Original Vaisala 2 result hPa	Original Vaisala 2 unc'ty hPa	Drift corr. Vaisala 2 result hPa	Drift corr. Vaisala 2 unc'ty hPa	Drift corr. deviation from LNE hPa	Drift corr. normalised error E_n
1100 down	0,0387	0,0101	0,00970	0,0235	0,013	0,0286	0,0150	-0,0101	-0,56
1050 down	0,0449	0,0096	0,01096	0,0275	0,012	0,0333	0,0127	-0,0116	-0,73
1000 down	0,0488	0,0093	0,01232	0,0345	0,012	0,0410	0,0128	-0,0078	-0,49
950 down	0,0528	0,0094	0,01510	0,0405	0,012	0,0485	0,0129	-0,0043	-0,27
850 down	0,0574	0,0089	0,01511	0,0450	0,012	0,0530	0,0166	-0,0044	-0,23
750 down	0,0651	0,0083	0,01814	0,0520	0,010	0,0616	0,0166	-0,0035	-0,19
650 down	0,0683	0,0085	0,01875	0,0630	0,011	0,0729	0,0148	0,0046	0,27
550 down	0,0737	0,0084	0,02233	0,0670	0,011	0,0788	0,0214	0,0051	0,22
500 down	0,0800	0,0176	0,01777	0,0755	0,010	0,0849	0,0195	0,0049	0,19
500 up	0,0775	0,0084	0,02229	0,0650	0,011	0,0768	0,0188	-0,0007	-0,03
550 up	0,0701	0,0088	0,02110	0,0585	0,011	0,0697	0,0180	-0,0004	-0,02
650 up	0,0596	0,0092	0,01895	0,0500	0,011	0,0600	0,0131	0,0004	0,03
750 up	0,0538	0,0105	0,01610	0,0410	0,011	0,0495	0,0148	-0,0043	-0,23
850 up	0,0482	0,0087	0,01314	0,0350	0,012	0,0420	0,0150	-0,0062	-0,36
950 up	0,0439	0,0089	0,01211	0,0265	0,011	0,0329	0,0132	-0,0110	-0,69
1000 up	0,0402	0,0092	0,01161	0,0220	0,012	0,0282	0,0188	-0,0120	-0,57
1050 up	0,0412	0,0098	0,01082	0,0240	0,012	0,0297	0,0143	-0,0115	-0,66
1100 up	0,0357	0,0107	0,00990	0,0250	0,013	0,0302	0,0138	-0,0055	-0,31

Result table 3 c

PTB330: Vaisala result set 3

Nominal pressure hPa		Reference values LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	Original Vaisala 3 result hPa	Original Vaisala 3 unc'ty hPa	Drift corr. Vaisala 3 result hPa	Drift corr. Vaisala 3 unc'ty hPa	Drift corr. deviation from LNE hPa	Drift corr. normalised error E_n
1100	down	0,0387	0,0101	0,00970	0,0435	0,013	0,0322	0,0157	-0,0065	-0,35
1050	down	0,0449	0,0096	0,01096	0,0480	0,013	0,0352	0,0138	-0,0097	-0,58
1000	down	0,0488	0,0093	0,01232	0,0575	0,012	0,0431	0,0131	-0,0057	-0,36
950	down	0,0528	0,0094	0,01510	0,0640	0,012	0,0463	0,0132	-0,0065	-0,40
850	down	0,0574	0,0089	0,01511	0,0760	0,012	0,0583	0,0179	0,0009	0,05
750	down	0,0651	0,0083	0,01814	0,0890	0,011	0,0678	0,0189	0,0027	0,13
650	down	0,0683	0,0085	0,01875	0,0995	0,010	0,0776	0,0153	0,0093	0,53
550	down	0,0737	0,0084	0,02233	0,1135	0,011	0,0874	0,0240	0,0137	0,54
500	down	0,0800	0,0176	0,01777	0,1135	0,010	0,0927	0,0219	0,0127	0,45
500	up	0,0775	0,0084	0,02229	0,1100	0,011	0,0839	0,0209	0,0064	0,29
550	up	0,0701	0,0088	0,02110	0,1010	0,010	0,0763	0,0194	0,0062	0,29
650	up	0,0596	0,0092	0,01895	0,0855	0,012	0,0633	0,0145	0,0037	0,22
750	up	0,0538	0,0105	0,01610	0,0730	0,010	0,0542	0,0153	0,0004	0,02
850	up	0,0482	0,0087	0,01314	0,0615	0,011	0,0461	0,0152	-0,0021	-0,12
950	up	0,0439	0,0089	0,01211	0,0505	0,012	0,0363	0,0147	-0,0076	-0,44
1000	up	0,0402	0,0092	0,01161	0,0485	0,012	0,0349	0,0207	-0,0053	-0,23
1050	up	0,0412	0,0098	0,01082	0,0460	0,013	0,0333	0,0158	-0,0079	-0,42
1100	up	0,0357	0,0107	0,00990	0,0440	0,013	0,0324	0,0141	-0,0033	-0,19

Result table 3 d

PTB330: MIKES results

Nominal pressure hPa		Reference values LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	Original MIKES result hPa	Original MIKES unc'ty hPa	Drift corr. MIKES result hPa	Drift corr. MIKES unc'ty hPa	Drift corr. deviation from LNE hPa	Drift corr. normalised error E_n
1100	down	0,0387	0,0101	0,00970	0,0402	0,018	0,0473	0,0194	0,0086	0,39
1050	down	0,0449	0,0096	0,01096	0,0365	0,017	0,0445	0,0175	-0,0004	-0,02
1000	down	0,0488	0,0093	0,01232	0,0430	0,017	0,0520	0,0172	0,0032	0,16
950	down	0,0528	0,0094	0,01510	0,0465	0,017	0,0575	0,0172	0,0047	0,24
850	down	0,0574	0,0089	0,01511	0,0503	0,016	0,0614	0,0199	0,0040	0,18
750	down	0,0651	0,0083	0,01814	0,0530	0,014	0,0662	0,0194	0,0011	0,05
650	down	0,0683	0,0085	0,01875	0,0578	0,013	0,0715	0,0165	0,0032	0,17
550	down	0,0737	0,0084	0,02233	0,0664	0,014	0,0827	0,0236	0,0090	0,36
500	down	0,0800	0,0176	0,01777	0,0696	0,014	0,0826	0,0225	0,0026	0,09
500	up	0,0775	0,0084	0,02229	0,0647	0,012	0,0809	0,0197	0,0034	0,16
550	up	0,0701	0,0088	0,02110	0,0569	0,013	0,0723	0,0198	0,0022	0,10
650	up	0,0596	0,0092	0,01895	0,0494	0,013	0,0632	0,0148	0,0036	0,21
750	up	0,0538	0,0105	0,01610	0,0420	0,014	0,0537	0,0177	-0,0001	0,00
850	up	0,0482	0,0087	0,01314	0,0402	0,015	0,0498	0,0174	0,0016	0,08
950	up	0,0439	0,0089	0,01211	0,0359	0,016	0,0448	0,0175	0,0009	0,04
1000	up	0,0402	0,0092	0,01161	0,0351	0,017	0,0435	0,0225	0,0033	0,14
1050	up	0,0412	0,0098	0,01082	0,0337	0,017	0,0416	0,0192	0,0004	0,02
1100	up	0,0357	0,0107	0,00990	0,0363	0,018	0,0435	0,0183	0,0078	0,37

Result table 4 a

PPC3 High range: Vaisala result set 1, E_n values calculated for Vaisala target CMC

Nominal pressure hPa		Reference values LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	Original Vaisala 1 result hPa	Vaisala **target** unc'ty hPa	Drift corr. Vaisala 1 result hPa	Drift corr. **target** unc'ty hPa	Drift corr. deviation from LNE hPa	Drift corr. normalised error for **target** unc'ty E_n
1300	down	-0,0101	0,013	-0,00376	-0,0200	0,0165	-0,0242	0,0167	-0,0141	-0,67
1200	down	-0,0116	0,012	-0,00383	-0,0180	0,0160	-0,0223	0,0165	-0,0107	-0,53
1000	down	-0,0163	0,011	-0,00390	-0,0170	0,0150	-0,0214	0,0161	-0,0051	-0,26
800	down	-0,0212	0,010	-0,00389	-0,0145	0,0140	-0,0189	0,0177	0,0023	0,11
600	down	-0,0157	0,007	-0,00335	-0,0080	0,0130	-0,0118	0,0148	0,0039	0,24
400	down	-0,0141	0,006	-0,00325	-0,0035	0,0120	-0,0072	0,0144	0,0069	0,44
200	down	-0,0192	0,004	-0,00328	-0,0045	0,0110	-0,0082	0,0152	0,0110	0,70
100	down	-0,0161	0,004	-0,00303	-0,0035	0,0105	-0,0069	0,0150	0,0092	0,59
50	down	-0,0118	0,004	-0,00294	-0,0005	0,0103	-0,0038	0,0175	0,0080	0,44
50	up	-0,0191	0,003	-0,00294	-0,0095	0,0103	-0,0128	0,0175	0,0063	0,35
100	up	-0,0245	0,004	-0,00278	-0,0130	0,0105	-0,0161	0,0192	0,0084	0,43
200	up	-0,0299	0,005	-0,00357	-0,0170	0,0110	-0,0210	0,0183	0,0089	0,47
400	up	-0,0230	0,006	-0,00429	-0,0140	0,0120	-0,0188	0,0149	0,0042	0,26
600	up	-0,0218	0,007	-0,00461	-0,0165	0,0130	-0,0217	0,0140	0,0001	0,01
800	up	-0,0222	0,009	-0,00440	-0,0225	0,0140	-0,0275	0,0141	-0,0053	-0,31
1000	up	-0,0202	0,011	-0,00438	-0,0220	0,0150	-0,0269	0,0153	-0,0067	-0,36
1200	up	-0,0158	0,012	-0,00407	-0,0215	0,0160	-0,0261	0,0161	-0,0103	-0,51
1300	up	-0,0125	0,013	-0,00462	-0,0200	0,0165	-0,0252	0,0167	-0,0127	-0,60

Result table 4 b

PPC3 High range: Vaisala result set 2, E_n values calculated for Vaisala target CMC

Nominal pressure hPa		Reference values LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	Original Vaisala 2 result hPa	Vaisala **target** unc'ty hPa	Drift corr. Vaisala 2 result hPa	Drift corr. **target** unc'ty hPa	Drift corr. deviation from LNE hPa	Drift corr. normalised error for **target** unc'ty E_n
1300	down	-0,0101	0,013	-0,00376	-0,0230	0,0165	-0,0256	0,0166	-0,0155	-0,74
1200	down	-0,0116	0,012	-0,00383	-0,0220	0,0160	-0,0247	0,0164	-0,0131	-0,64
1000	down	-0,0163	0,011	-0,00390	-0,0220	0,0150	-0,0247	0,0159	-0,0084	-0,44
800	down	-0,0212	0,010	-0,00389	-0,0225	0,0140	-0,0252	0,0171	-0,0040	-0,20
600	down	-0,0157	0,007	-0,00335	-0,0135	0,0130	-0,0158	0,0144	-0,0001	-0,01
400	down	-0,0141	0,006	-0,00325	-0,0095	0,0120	-0,0118	0,0140	0,0023	0,15
200	down	-0,0192	0,004	-0,00328	-0,0120	0,0110	-0,0143	0,0145	0,0049	0,33
100	down	-0,0161	0,004	-0,00303	-0,0110	0,0105	-0,0131	0,0142	0,0030	0,20
50	down	-0,0118	0,004	-0,00294	-0,0100	0,0103	-0,0121	0,0164	-0,0003	-0,02
50	up	-0,0191	0,003	-0,00294	-0,0190	0,0103	-0,0211	0,0164	-0,0020	-0,12
100	up	-0,0245	0,004	-0,00278	-0,0235	0,0105	-0,0254	0,0179	-0,0009	-0,05
200	up	-0,0299	0,005	-0,00357	-0,0270	0,0110	-0,0295	0,0171	0,0004	0,02
400	up	-0,0230	0,006	-0,00429	-0,0210	0,0120	-0,0240	0,0144	-0,0010	-0,06
600	up	-0,0218	0,007	-0,00461	-0,0215	0,0130	-0,0247	0,0138	-0,0029	-0,19
800	up	-0,0222	0,009	-0,00440	-0,0255	0,0140	-0,0286	0,0141	-0,0064	-0,38
1000	up	-0,0202	0,011	-0,00438	-0,0255	0,0150	-0,0286	0,0152	-0,0084	-0,45
1200	up	-0,0158	0,012	-0,00407	-0,0240	0,0160	-0,0268	0,0160	-0,0110	-0,55
1300	up	-0,0125	0,013	-0,00462	-0,0235	0,0165	-0,0267	0,0167	-0,0142	-0,67

Result table 4 c

PPC3 High range: Vaisala result set 3, E_n values calculated for Vaisala target CMC

Nominal pressure hPa		Reference values			Original Vaisala 3 result	Vaisala **target** unc'ty	Drift corr. Vaisala 3 result	Drift corr. **target** unc'ty	Drift corr. deviation from LNE	Drift corr. normalised error for **target** unc'ty
		LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	hPa	hPa	hPa	hPa	hPa	E_n
1300	down	-0,0101	0,013	-0,00376	-0,0290	0,0165	-0,0247	0,0167	-0,0146	-0,69
1200	down	-0,0116	0,012	-0,00383	-0,0275	0,0160	-0,0231	0,0165	-0,0115	-0,57
1000	down	-0,0163	0,011	-0,00390	-0,0270	0,0150	-0,0226	0,0161	-0,0063	-0,32
800	down	-0,0212	0,010	-0,00389	-0,0255	0,0140	-0,0211	0,0178	0,0001	0,01
600	down	-0,0157	0,007	-0,00335	-0,0170	0,0130	-0,0132	0,0148	0,0025	0,15
400	down	-0,0141	0,006	-0,00325	-0,0125	0,0120	-0,0088	0,0144	0,0053	0,34
200	down	-0,0192	0,004	-0,00328	-0,0140	0,0110	-0,0103	0,0152	0,0089	0,57
100	down	-0,0161	0,004	-0,00303	-0,0125	0,0105	-0,0090	0,0150	0,0071	0,45
50	down	-0,0118	0,004	-0,00294	-0,0100	0,0103	-0,0066	0,0175	0,0052	0,29
50	up	-0,0191	0,003	-0,00294	-0,0190	0,0103	-0,0156	0,0175	0,0035	0,19
100	up	-0,0245	0,004	-0,00278	-0,0225	0,0105	-0,0193	0,0192	0,0052	0,26
200	up	-0,0299	0,005	-0,00357	-0,0280	0,0110	-0,0239	0,0183	0,0060	0,31
400	up	-0,0230	0,006	-0,00429	-0,0255	0,0120	-0,0206	0,0149	0,0024	0,15
600	up	-0,0218	0,007	-0,00461	-0,0280	0,0130	-0,0227	0,0140	-0,0009	-0,06
800	up	-0,0222	0,009	-0,00440	-0,0330	0,0140	-0,0280	0,0141	-0,0058	-0,35
1000	up	-0,0202	0,011	-0,00438	-0,0325	0,0150	-0,0275	0,0153	-0,0073	-0,39
1200	up	-0,0158	0,012	-0,00407	-0,0310	0,0160	-0,0264	0,0161	-0,0106	-0,53
1300	up	-0,0125	0,013	-0,00462	-0,0310	0,0165	-0,0257	0,0167	-0,0132	-0,63

Result table 5 a

PPC3 Low range: Vaisala result set 1, E_n values calculated for Vaisala target CMC

Nominal pressure hPa		Reference values			Original Vaisala 1 result	Vaisala **target** unc'ty	Drift corr. Vaisala 1 result	Drift corr. **target** unc'ty	Drift corr. deviation from LNE	Drift corr. normalised error for **target** unc'ty
		LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	hPa	hPa	hPa	hPa	hPa	E_n
1100	down	0,0180	0,0103	0,00170	0,0005	0,0155	0,0024	0,0155	-0,0156	-0,84
1050	down	0,0202	0,0098	0,00194	0,0010	0,0153	0,0031	0,0153	-0,0171	-0,94
1000	down	0,0165	0,0093	0,00255	0,0015	0,0150	0,0043	0,0151	-0,0122	-0,69
950	down	0,0152	0,0088	0,00235	0,0015	0,0148	0,0041	0,0148	-0,0111	-0,65
850	down	0,0114	0,0082	0,00231	0,0005	0,0143	0,0030	0,0143	-0,0084	-0,51
750	down	0,0083	0,0074	0,00214	0,0005	0,0138	0,0028	0,0139	-0,0055	-0,35
650	down	0,0092	0,0068	0,00184	0,0000	0,0133	0,0020	0,0133	-0,0072	-0,48
550	down	0,0052	0,0063	0,00197	-0,0005	0,0128	0,0016	0,0131	-0,0036	-0,25
500	down	0,0040	0,0059	0,00221	-0,0010	0,0125	0,0014	0,0129	-0,0026	-0,18
500	up	0,0059	0,0056	0,00191	-0,0030	0,0125	-0,0009	0,0126	-0,0068	-0,49
550	up	0,0060	0,0059	0,00180	-0,0005	0,0128	0,0015	0,0132	-0,0045	-0,31
650	up	0,0101	0,0072	0,00174	0,0010	0,0133	0,0029	0,0135	-0,0072	-0,47
750	up	0,0125	0,0076	0,00191	0,0025	0,0138	0,0046	0,0139	-0,0079	-0,50
850	up	0,0153	0,0081	0,00214	0,0030	0,0143	0,0053	0,0144	-0,0100	-0,60
950	up	0,0176	0,0089	0,00238	0,0040	0,0148	0,0066	0,0149	-0,0110	-0,63
1000	up	0,0197	0,0094	0,00276	0,0050	0,0150	0,0080	0,0156	-0,0117	-0,64
1050	up	0,0204	0,0099	0,00122	0,0035	0,0153	0,0048	0,0153	-0,0156	-0,85
1100	up	0,0171	0,0103	0,00160	0,0040	0,0155	0,0057	0,0155	-0,0114	-0,61

Result table 5 b

PPC3 Low range: Vaisala result set 2, E$_n$ values calculated for Vaisala target CMC

Nominal pressure hPa	**Reference values** LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	Original Vaisala 2 result hPa	Vaisala **target** unc'ty hPa	Drift corr. Vaisala 2 result hPa	Drift corr. **target** unc'ty hPa	Drift corr. deviation from LNE hPa	Drift corr. normalised error for **target** unc'ty E$_n$
1100 down	0,0180	0,0103	0,00170	0,0020	0,0155	0,0029	0,0155	-0,0151	-0,81
1050 down	0,0202	0,0098	0,00194	0,0025	0,0153	0,0035	0,0153	-0,0167	-0,92
1000 down	0,0165	0,0093	0,00255	0,0020	0,0150	0,0034	0,0151	-0,0131	-0,74
950 down	0,0152	0,0088	0,00235	0,0035	0,0148	0,0047	0,0148	-0,0105	-0,61
850 down	0,0114	0,0082	0,00231	0,0010	0,0143	0,0022	0,0143	-0,0092	-0,56
750 down	0,0083	0,0074	0,00214	0,0005	0,0138	0,0016	0,0139	-0,0067	-0,42
650 down	0,0092	0,0068	0,00184	0,0005	0,0133	0,0015	0,0133	-0,0077	-0,52
550 down	0,0052	0,0063	0,00197	-0,0010	0,0128	0,0000	0,0130	-0,0052	-0,36
500 down	0,0040	0,0059	0,00221	-0,0015	0,0125	-0,0003	0,0128	-0,0043	-0,31
500 up	0,0059	0,0056	0,00191	-0,0030	0,0125	-0,0020	0,0126	-0,0079	-0,57
550 up	0,0060	0,0059	0,00180	-0,0015	0,0128	-0,0005	0,0131	-0,0065	-0,46
650 up	0,0101	0,0072	0,00174	0,0005	0,0133	0,0014	0,0134	-0,0087	-0,57
750 up	0,0125	0,0076	0,00191	0,0025	0,0138	0,0035	0,0138	-0,0090	-0,57
850 up	0,0153	0,0081	0,00214	0,0030	0,0143	0,0041	0,0144	-0,0112	-0,68
950 up	0,0176	0,0089	0,00238	0,0040	0,0148	0,0053	0,0149	-0,0123	-0,71
1000 up	0,0197	0,0094	0,00276	0,0040	0,0150	0,0055	0,0155	-0,0142	-0,79
1050 up	0,0204	0,0099	0,00122	0,0050	0,0153	0,0056	0,0153	-0,0148	-0,81
1100 up	0,0171	0,0103	0,00160	0,0045	0,0155	0,0053	0,0155	-0,0118	-0,63

Result table 5 c

PPC3 Low range: Vaisala result set 3, E$_n$ values calculated for Vaisala target CMC

Nominal pressure hPa	**Reference values** LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	Original Vaisala 3 result hPa	Vaisala **target** unc'ty hPa	Drift corr. Vaisala 3 result hPa	Drift corr. **target** unc'ty hPa	Drift corr. deviation from LNE hPa	Drift corr. normalised error for **target** unc'ty E$_n$
1100 down	0,0180	0,0103	0,00170	0,0045	0,0155	0,0054	0,0155	-0,0126	-0,68
1050 down	0,0202	0,0098	0,00194	0,0055	0,0153	0,0065	0,0153	-0,0137	-0,75
1000 down	0,0165	0,0093	0,00255	0,0070	0,0150	0,0084	0,0151	-0,0081	-0,46
950 down	0,0152	0,0088	0,00235	0,0070	0,0148	0,0082	0,0148	-0,0070	-0,40
850 down	0,0114	0,0082	0,00231	0,0055	0,0143	0,0067	0,0143	-0,0047	-0,28
750 down	0,0083	0,0074	0,00214	0,0050	0,0138	0,0061	0,0139	-0,0022	-0,14
650 down	0,0092	0,0068	0,00184	0,0040	0,0133	0,0050	0,0133	-0,0042	-0,28
550 down	0,0052	0,0063	0,00197	0,0035	0,0128	0,0045	0,0131	-0,0007	-0,05
500 down	0,0040	0,0059	0,00221	0,0035	0,0125	0,0047	0,0129	0,0007	0,05
500 up	0,0059	0,0056	0,00191	0,0010	0,0125	0,0020	0,0126	-0,0039	-0,28
550 up	0,0060	0,0059	0,00180	0,0030	0,0128	0,0040	0,0132	-0,0020	-0,14
650 up	0,0101	0,0072	0,00174	0,0045	0,0133	0,0054	0,0135	-0,0047	-0,31
750 up	0,0125	0,0076	0,00191	0,0065	0,0138	0,0075	0,0139	-0,0050	-0,32
850 up	0,0153	0,0081	0,00214	0,0075	0,0143	0,0086	0,0144	-0,0067	-0,40
950 up	0,0176	0,0089	0,00238	0,0090	0,0148	0,0103	0,0149	-0,0073	-0,42
1000 up	0,0197	0,0094	0,00276	0,0105	0,0150	0,0120	0,0157	-0,0077	-0,42
1050 up	0,0204	0,0099	0,00122	0,0065	0,0153	0,0071	0,0153	-0,0133	-0,73
1100 up	0,0171	0,0103	0,00160	0,0075	0,0155	0,0083	0,0155	-0,0088	-0,47

Result table 6 a

PTB330: Vaisala result set 1, E_n values calculated for Vaisala target CMC

Nominal pressure hPa	**Reference values** LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	Original Vaisala 1 result hPa	Vaisala **target** unc'ty hPa	Drift corr. Vaisala 1 result hPa	Drift corr. **target** unc'ty hPa	Drift corr. deviation from LNE hPa	Drift corr. normalised error for **target** unc'ty E_n
1100 down	0,0387	0,0101	0,00970	0,0230	0,013	0,0336	0,0177	-0,0051	-0,25
1050 down	0,0449	0,0096	0,01096	0,0240	0,013	0,0359	0,0159	-0,0090	-0,48
1000 down	0,0488	0,0093	0,01232	0,0305	0,013	0,0439	0,0158	-0,0049	-0,27
950 down	0,0528	0,0094	0,01510	0,0290	0,012	0,0455	0,0157	-0,0073	-0,40
850 down	0,0574	0,0089	0,01511	0,0440	0,012	0,0605	0,0193	0,0031	0,14
750 down	0,0651	0,0083	0,01814	0,0505	0,012	0,0703	0,0204	0,0052	0,23
650 down	0,0683	0,0085	0,01875	0,0590	0,012	0,0794	0,0174	0,0111	0,57
550 down	0,0737	0,0084	0,02233	0,0665	0,013	0,0908	0,0245	0,0171	0,66
500 down	0,0800	0,0176	0,01777	0,0765	0,012	0,0959	0,0228	0,0159	0,55
500 up	0,0775	0,0084	0,02229	0,0625	0,011	0,0868	0,0214	0,0093	0,40
550 up	0,0701	0,0088	0,02110	0,0560	0,012	0,0790	0,0206	0,0089	0,40
650 up	0,0596	0,0092	0,01895	0,0440	0,011	0,0647	0,0155	0,0051	0,28
750 up	0,0538	0,0105	0,01610	0,0385	0,012	0,0560	0,0178	0,0022	0,11
850 up	0,0482	0,0087	0,01314	0,0335	0,012	0,0478	0,0175	-0,0004	-0,02
950 up	0,0439	0,0089	0,01211	0,0245	0,013	0,0377	0,0169	-0,0062	-0,32
1000 up	0,0402	0,0092	0,01161	0,0250	0,013	0,0377	0,0223	-0,0025	-0,11
1050 up	0,0412	0,0098	0,01082	0,0230	0,013	0,0348	0,0176	-0,0064	-0,32
1100 up	0,0357	0,0107	0,00990	0,0225	0,014	0,0333	0,0164	-0,0024	-0,12

Result table 6 b

PTB330: Vaisala result set 2, E_n values calculated for Vaisala target CMC

Nominal pressure hPa	**Reference values** LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	Original Vaisala 2 result hPa	Vaisala **target** unc'ty hPa	Drift corr. Vaisala 2 result hPa	Drift corr. **target** unc'ty hPa	Drift corr. deviation from LNE hPa	Drift corr. normalised error for **target** unc'ty E_n
1100 down	0,0387	0,0101	0,00970	0,0235	0,016	0,0286	0,0172	-0,0101	-0,50
1050 down	0,0449	0,0096	0,01096	0,0275	0,015	0,0333	0,0158	-0,0116	-0,63
1000 down	0,0488	0,0093	0,01232	0,0345	0,015	0,0410	0,0156	-0,0078	-0,43
950 down	0,0528	0,0094	0,01510	0,0405	0,015	0,0485	0,0155	-0,0043	-0,24
850 down	0,0574	0,0089	0,01511	0,0450	0,014	0,0530	0,0182	-0,0044	-0,22
750 down	0,0651	0,0083	0,01814	0,0520	0,014	0,0616	0,0191	-0,0035	-0,17
650 down	0,0683	0,0085	0,01875	0,0630	0,013	0,0729	0,0166	0,0046	0,25
550 down	0,0737	0,0084	0,02233	0,0670	0,013	0,0788	0,0223	0,0051	0,22
500 down	0,0800	0,0176	0,01777	0,0755	0,013	0,0849	0,0209	0,0049	0,18
500 up	0,0775	0,0084	0,02229	0,0650	0,013	0,0768	0,0197	-0,0007	-0,03
550 up	0,0701	0,0088	0,02110	0,0585	0,013	0,0697	0,0191	-0,0004	-0,02
650 up	0,0596	0,0092	0,01895	0,0500	0,013	0,0600	0,0150	0,0004	0,03
750 up	0,0538	0,0105	0,01610	0,0410	0,014	0,0495	0,0170	-0,0043	-0,21
850 up	0,0482	0,0087	0,01314	0,0350	0,014	0,0420	0,0168	-0,0062	-0,33
950 up	0,0439	0,0089	0,01211	0,0265	0,015	0,0329	0,0165	-0,0110	-0,59
1000 up	0,0402	0,0092	0,01161	0,0220	0,015	0,0282	0,0209	-0,0120	-0,53
1050 up	0,0412	0,0098	0,01082	0,0240	0,015	0,0297	0,0171	-0,0115	-0,58
1100 up	0,0357	0,0107	0,00990	0,0250	0,016	0,0302	0,0162	-0,0055	-0,28

Result table 6 c

PTB330: Vaisala result set 3, E_n values calculated for Vaisala target CMC

Nominal pressure hPa		Reference values LNE result hPa	LNE unc'ty hPa	Drift correction hPa/month	Original Vaisala 3 result hPa	Vaisala **target** unc'ty hPa	Drift corr. Vaisala 3 result hPa	Drift corr. **target** unc'ty hPa	Drift corr. deviation from LNE hPa	Drift corr. normalised error for **target** unc'ty E_n
1100	down	0,0387	0,0101	0,00970	0,0435	0,016	0,0322	0,0178	-0,0065	-0,32
1050	down	0,0449	0,0096	0,01096	0,0480	0,015	0,0352	0,0160	-0,0097	-0,52
1000	down	0,0488	0,0093	0,01232	0,0575	0,015	0,0431	0,0159	-0,0057	-0,31
950	down	0,0528	0,0094	0,01510	0,0640	0,015	0,0463	0,0157	-0,0065	-0,35
850	down	0,0574	0,0089	0,01511	0,0760	0,014	0,0583	0,0195	0,0009	0,04
750	down	0,0651	0,0083	0,01814	0,0890	0,014	0,0678	0,0207	0,0027	0,12
650	down	0,0683	0,0085	0,01875	0,0995	0,013	0,0776	0,0176	0,0093	0,47
550	down	0,0737	0,0084	0,02233	0,1135	0,013	0,0874	0,0249	0,0137	0,52
500	down	0,0800	0,0176	0,01777	0,1135	0,013	0,0927	0,0232	0,0127	0,44
500	up	0,0775	0,0084	0,02229	0,1100	0,013	0,0839	0,0217	0,0064	0,28
550	up	0,0701	0,0088	0,02110	0,1010	0,013	0,0763	0,0209	0,0062	0,27
650	up	0,0596	0,0092	0,01895	0,0855	0,013	0,0633	0,0156	0,0037	0,21
750	up	0,0538	0,0105	0,01610	0,0730	0,014	0,0542	0,0180	0,0004	0,02
850	up	0,0482	0,0087	0,01314	0,0615	0,014	0,0461	0,0177	-0,0021	-0,11
950	up	0,0439	0,0089	0,01211	0,0505	0,015	0,0363	0,0170	-0,0076	-0,39
1000	up	0,0402	0,0092	0,01161	0,0485	0,015	0,0349	0,0226	-0,0053	-0,22
1050	up	0,0412	0,0098	0,01082	0,0460	0,015	0,0333	0,0177	-0,0079	-0,39
1100	up	0,0357	0,0107	0,00990	0,0440	0,016	0,0324	0,0164	-0,0033	-0,17

Recent publications

J1/2006   M. Rantanen, S. Semenoja, *Intercomparison in Gauge Pressure Range from -95kPa to +100 kPa*

J2/2006   M. Heinonen, J. Järvinen, A. Lassila, A. Manninen (Eds.), *Finnish National Standards Laboratories Annual Report 2005*

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J9/2006   R. Rajala, *Yleismittarin vertailumittaus*

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J3/2007   M. Rantanen, S. Semenoja, J. Leskinen, *Absolute pressure comparison between MIKES and Vaisala Oyj Range 10 Pa to 5000 Pa*

J4/2007   M. Rantanen, S. Semenoja, M. Ackerholm, A. Condereys, Z. Krajicek, W. Sabuga, J. Verbeek, C. Wüthrich, *High pressure comparisons between seven European National Laboratories - Range 50 MPa to 500 MPa. Report on EUROMET Project 881*

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J7/2007   T. Weckström, *Termoelementtivertailu*

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