Correction to: Comparison of techniques for quantification of internal stress within industrial kiln-dried timber

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Unfortunately, an unintentional mistake has been made during calculation of maximum gap distance G_{100} for the 100 mm wide timber in the presented article.

The G_{100} values of the 100 mm wide timber displayed in Fig. 5b, Fig. 5c, Fig. 6 and Fig. 13 were calculated using an incorrect equation $G_{100} = G_{75} \times 1.78 \times 1.78$ where G_{75} is the maximum gap distance measured at 75 mm pin separation. Referring to the standard case-hardening test, the value of G_{100} is calculated according to $G_{100} = G_{75} \times 1.78$. The mistake has led to an inaccurate discussion that the G_{100} value is dependent on the width of the timber when being compared to the results obtained from the restoring force technique and the McMillen slice test.

The corrected results reveal that the G_{100} value is independent of the timber width and the proposed restoring force technique, the McMillen slice test and the standard case-hardening test are quantitatively consistent among each other. The changes do not affect final conclusions in the published article. However, some discussions related to the standard case-hardening test do contain errors that require corrections.

Error 1: Fig. 5b and related discussions in Sect. 4.1

Errors in the published article:

Similar linear correlation is also observed when comparing the maximum gap distance according to the case-hardening test method against the magnitude of the released strain *except that higher values of linear coefficients are observed in the wider timber (Fig. 5a, b)*. For the case-hardening test, Eq. (1) can be rearranged as $\Delta\delta = \frac{4W^2}{d}E\sigma_m$ given that the half-split length is equal to width of timber ($l = W$). *Therefore, wider specimen gives higher value of $\Delta\delta$, bending of the half slice and therefore the maximum gap measured in the case-hardening test.*

Figure 5b in the published article contains errors. The G_{100} values plotted in the vertical axis of all data were calculated using an incorrect equation $G_{100} = G_{75} \times 1.78 \times 1.78$.

Corrections:

Similar linear correlation is also observed when comparing the maximum gap distance according to the case-hardening test method against the magnitude of the released strain. *The linear coefficients are independent of the timber width (Figs. 5a–b)*. For the case-hardening test, Eq. (1) can be rearranged as $\Delta\delta = \frac{4W^2}{d}E\sigma_m$ given that the

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half-split length is equal to width of timber ($l = W$). Therefore, the value of $\Delta\delta$, bending of the half slice and therefore the maximum gap measured in the case-hardening test, varies with square of the timber width (Welling 1994).

The G_{100} values are corrected according to $G_{100} = G_{75} \times 1.78$.

Error 2: Fig. 5c and related discussions in Sect. 4.1

Errors in the published article:

It is clear that sensitivities, the slopes of the plots, of the restoring force technique (Fig. 4d) and the case-hardening test (Fig. 5c) decrease and increase with the timber width, respectively. At the same level of the differential released strain, the wider timber produces the lesser restoring force and the higher maximum gap distance.

Figure 5c in the published article contains errors. The G_{100} values of the 100 mm wide timber (open square symbols) plotted in the vertical axis were calculated using an incorrect equation $G_{100} = G_{75} \times 1.78 \times 1.78$.

Corrections:

It is clear that sensitivities, the slopes of the plots, of the restoring force technique (Fig. 4d) decrease with the timber width while those of the case-hardening test (Fig. 5c) are unaffected. At the same level of the differential released strain, the wider timber produces the lesser restoring force but yields constant level of G_{100} .

The G_{100} values of the 100 mm wide timber (open square symbols) are corrected according to $G_{100} = G_{75} \times 1.78$.

Error 3: Fig. 6

Errors in the published article:

Figure 6 in the published article contains errors. The G_{100} values of the 100 mm wide timber (open square symbols) plotted in the horizontal axis were calculated using an incorrect equation $G_{100} = G_{75} \times 1.78 \times 1.78$.

Corrections:

The G_{100} values of the 100 mm wide timber (open square symbols) are corrected according to $G_{100} = G_{75} \times 1.78$.

Error 4: Fig. 13 and related discussion in Sect. 4.3

Errors in the published article:

Figure 13 shows the calculated maximum internal stress plotted against the maximum gap distance values obtained from the case-hardening test. *Although both values follow a linear relationship, the maximum gap distance value is dependent on the width of the timber meaning that different sizes of timber could yield different gap distance values even though they possess a similar level of internal stress.* This behavior is also confirmed by a plot of the maximum gap distance against the differential released strain (Fig. 5c) in which linear constants obtained *are dependent on the width of the timber.*

Figure 13 in the published article contains errors. The G_{100} values of the 100 mm wide timber (open square symbols) plotted in the horizontal axis were calculated using an incorrect equation $G_{100} = G_{75} \times 1.78 \times 1.78$.

Corrections:

Figure 13 shows the calculated maximum internal stress plotted against the maximum gap distance values obtained from the case-hardening test. *Both values follow a linear relationship and the maximum gap distance value is independent of the width of the timber meaning that different sizes of timber yield similar gap distance values if they possess a similar level of the internal stress.* This behavior is also confirmed by a plot of the maximum gap distance against the differential released strain (Fig. 5c) in which linear constants obtained *are independent of the width of the timber.*

The G_{100} values (open square symbols) of the 100 mm wide timber are corrected according to $G_{100} = G_{75} \times 1.78$.