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CORRECTION

# Correction to: Variable decomposition approach applied to multi-objective optimization for minimum powering of commercial ships

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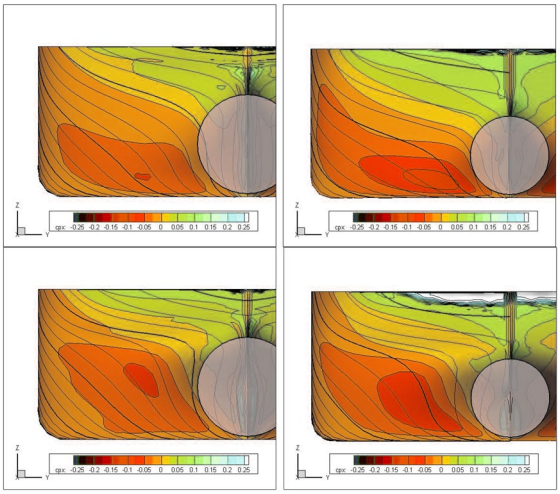
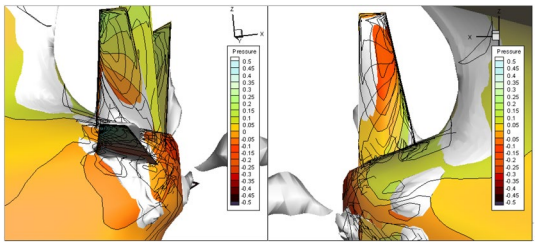
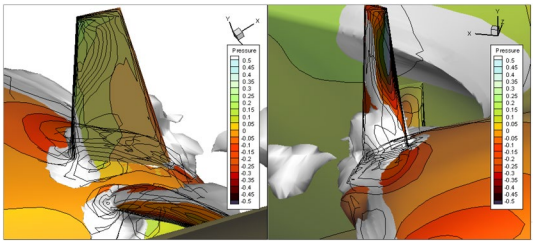
In the original publication of the article Figs. 14, 26b, e, Eqs. (2), (23), (24), (27), (29) and (30) are incorrectly published. The correct figures and equations are provided in this article.







$$\frac{\delta \mathrm{DP}}{\mathrm{DP}} = \frac{\delta R}{R} - \frac{\delta \eta_{\mathrm{P}}}{\eta_{\mathrm{P}}} \tag{2}$$

$$\begin{aligned} \mathrm{DP} &\propto \frac{\rho \pi D^2}{16 \alpha_P \eta_R} {V_{\mathrm{a}}}^3 \beta {C_{\mathrm{th}}}^r \\ &= \frac{8^r (\rho \pi D^2)^{1-r} \beta {V_S}^{3-2r}}{16 \alpha_{\mathrm{P}} \eta_R} (1 - w_{\mathrm{S}})^{3-2r} R^r (1-t)^{-r} \end{aligned} \tag{23}$$

$$\mathrm{DP} \propto \frac{1}{\eta_R} (1 - w_{\mathrm{S}})^{3-2r} R^r (1-t)^{-r} \tag{24}$$

$$\frac{1}{r}\frac{\delta \mathrm{DP}}{\mathrm{DP}} \approx \frac{\delta R}{R} - \frac{\delta(1-t)}{(1-t)} + 0.439 \frac{\delta(1-w_{\mathrm{S}})}{(1-w_{\mathrm{S}})} - 0.813 \frac{\delta \eta_R}{\eta_R} \tag{27}$$

$$\begin{aligned} \frac{1}{r}\frac{\delta \mathrm{DP}}{\mathrm{DP}} &= -\frac{\delta(1-t)}{(1-t)} + \frac{3-2r}{r} \frac{\delta(1-w_{\mathrm{S}})}{(1-w_{\mathrm{S}})} - \frac{1}{r}\frac{\delta \eta_R}{\eta_R} \\ &\approx -\frac{\delta(1-t)}{(1-t)} + 0.439 \frac{\delta(1-w_{\mathrm{S}})}{(1-w_{\mathrm{S}})} - 0.813 \frac{\delta \eta_R}{\eta_R} \end{aligned} \tag{29}$$

$$\frac{1}{r}\frac{\delta \mathrm{DP}}{\mathrm{DP}} \approx -\frac{\delta(1-t)}{(1-t)} + 0.439 \frac{\delta(1-w_t)}{(1-w_t)} - 0.813 \frac{\delta \eta_R}{\eta_R} \tag{30}$$

The original article can be found online at https://doi.org/10.1007/s00773-018-0551-5.

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