

$$f = \frac{M_R \beta \gamma}{DH}$$

f - excitation force (Alford force) (N)

M_R - Resistance Torque (N·m)

γ - eccentric distance (m)

D - rotor diameter (m)

H – rotor height (the same as rotor length L) (m)

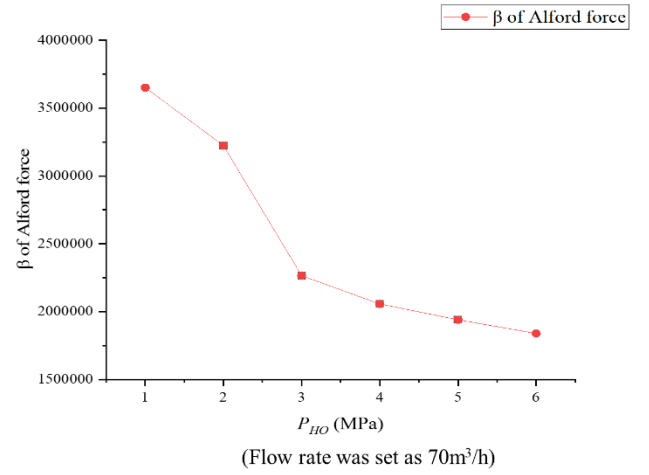
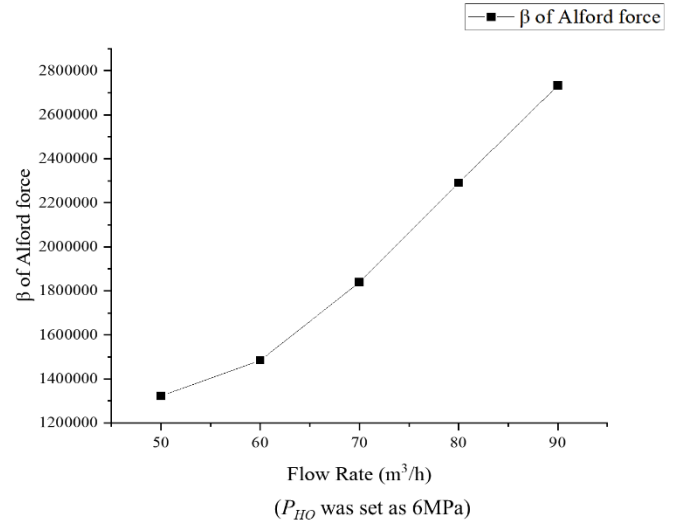


Figure S1. Calculation results of the efficiency factor (β) of Alford force under different working conditions.