

Highlights

- Implemented wall-mounted flexible structures within a channel flow to serve as passive mixing devices.
- Examined various positions of the flexible structures to identify the optimal configuration for flow mixing at different Reynolds numbers.
- Conducted a cost-benefit analysis comparing mixing efficiency to pressure head loss.
- Found that two vertically aligned wall-mounted plates yield the highest mixing but also cause significant pressure losses.
- A single plate in the channel achieves moderate mixing with lower head losses.