

General assessment

The manuscript examines how selected operating parameters affect the reel-out performance of the KM1 system. The scope and limitations are generally clear. I recommend minor revision to clarify a few methodological details and make the parameter comparisons easier to follow.

Abstract

Please specify more clearly what the study adds to earlier work on operating parameters, particularly through the use of fixed controller settings and hardware limits. The percentage improvements are useful, but a brief description of the baseline operating conditions would make them easier to interpret.

Introduction

The objective is clear, but the connection to earlier parameter studies could be more specific. Which findings does this study extend, and which questions does it address for the KM1 configuration?

An annotation of the existing illustration, or an additional schematic, would help explain the helix-axis elevation angle, minimum production height, and local flight-path plane.

Dynamic model and simulation framework

This section would benefit from a schematic illustration of the body-fixed, inertial wind, and traction frames and their relative orientations. This could be combined with the geometrical illustration suggested above.

Simulation methodology

Please specify the number of simulated pumping cycles and whether initial transients are excluded from the reported averages.

A compact overview of the five analysis cases would improve readability. The existing parameter tables could be extended to indicate the varied parameters, tested ranges, baseline settings, and wind conditions for each case; a schematic could provide additional visual support.

Please also clarify how “qualitative flight stability” is assessed (lines 225–227) and distinguish the individual sensitivity studies from the sequential parameter-selection procedure.

Results

Section 4.3.2 correctly notes that the two wind cases differ in both mean wind speed and time dependence. A steady case at 8 m/s would help separate these effects. I regard this as an optional addition, since the limitation of the current comparison is already acknowledged.

In Section 4.4, please provide the flap-scheduling law, including the switching thresholds and any hysteresis, if used. Showing airspeed alongside the flap command would help explain the switching behavior.

For Sections 4.5 and 4.6, a compact table or plot summarizing the already evaluated heights and elevation angles would better substantiate the selected best-performing settings.

Discussion

Some numerical results are repeated in the discussion and could be shortened. If available, tether-tension and reel-speed data would help explain the observed power changes.

In Section 5.3, I would be cautious about interpreting the lack of an additional gain from elevation-angle tuning as evidence of overlapping effects. The best-performing angle remained at the baseline value, and this alone does not establish an interaction with minimum production height.

Section 5.4 could state more directly what has been learned beyond previous studies. A short closing paragraph bringing together the best-performing tested settings would also be useful, provided their dependence on the simulated conditions remains clear.

Conclusion

“Dominant performance parameters” seems slightly too broad for the tested ranges. I suggest “most influential parameters within the investigated cases.” Similarly, “selecting the best-performing tested minimum production height” would describe the procedure more precisely than “optimizing the minimum production height.”