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# Analysis of concentrating collector's geometry with a motorless tracking mechanism

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The operation of solar tracking needs a considerable amount of electricity and reduces the energy conversion efficiency. In this work, a motorless tracking mechanism for a linear concentrator has been modelled and analysed for the minimum tracking loads. A hydraulically damped suspension spring has been used for the smooth rotation of the collector without causing vibrations. The analysis is focused on the geometry of the collector and the mechanics of tracking. The analysis results in a lower tracking load as a function of sprocket wheel size, spring strength and maximum deflection of the spring, which is independent of the collector weight. A high geometric factor increases the stability of the collector and provides smooth and simple tracking with minimal tracking load. The geometric factor should be greater than 0.53 for the wide collector with stable rotation. The maximum incidence angle with N-S axis motorless tracking is 30° during the winter solstice. An increase in sprocket wheel size and geometric factors results in favourable conditions.

**Keywords**: Solar concentrating collector, Tracking, Error, Motorless.

## Biography

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