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"Wikipedia: Whee-lo", 31.12.1953, https://en.wikipedia.org/wiki/WHEE-LO, 17.04.2026, Whee-lo toy

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(54) Title of the Invention: **Method for managing and extracting non-linear parallel force vectors in a gravitational mechanical energy generator track**

Abstract Title: **Method for optimising force extraction in a non-circular gravitational energy converter track**

(57) A method and system intended for continuous gravitational energy transfer identifies a non-linear parallel force vectors (Fp) and optimises energy extraction at different points around the track. The system further identifies the most effective time to change the tilt of the track according to weight position and speed. Figure 14b

FIGURE 14 (b)

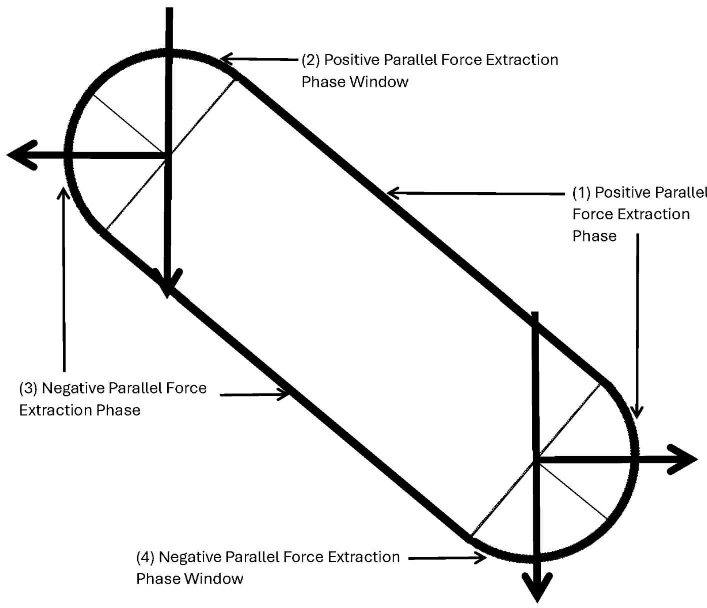


FIGURE 14 (a)

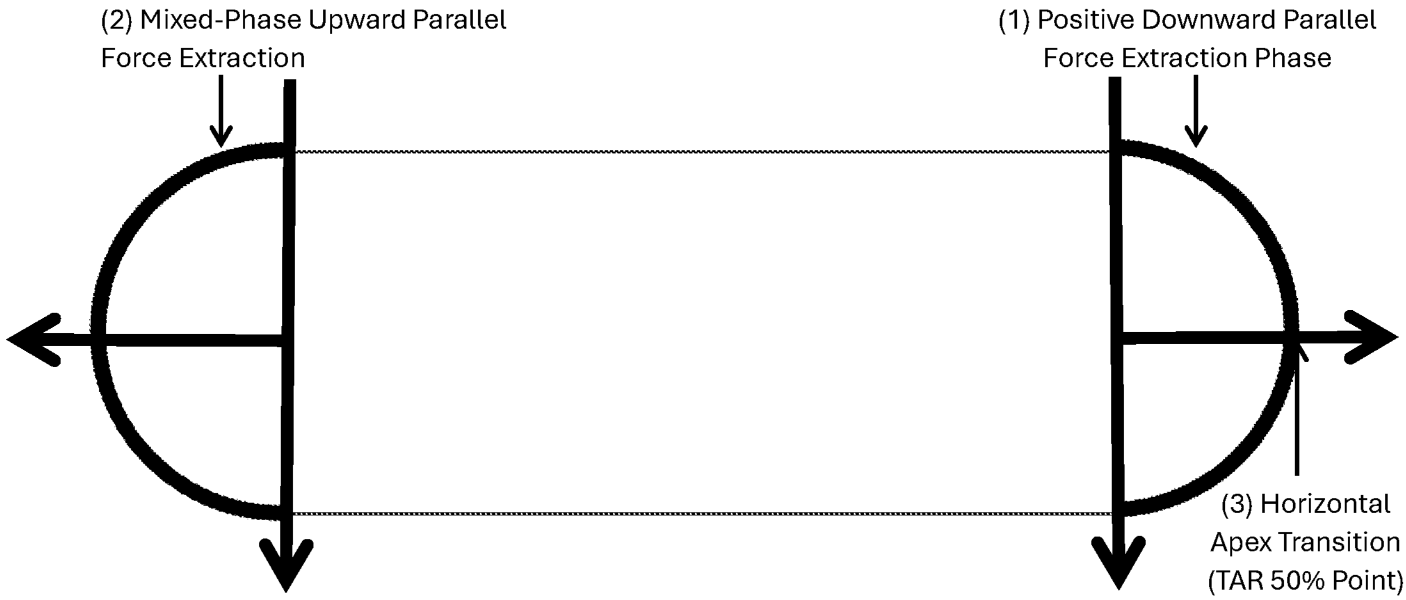


FIGURE 14 (b)

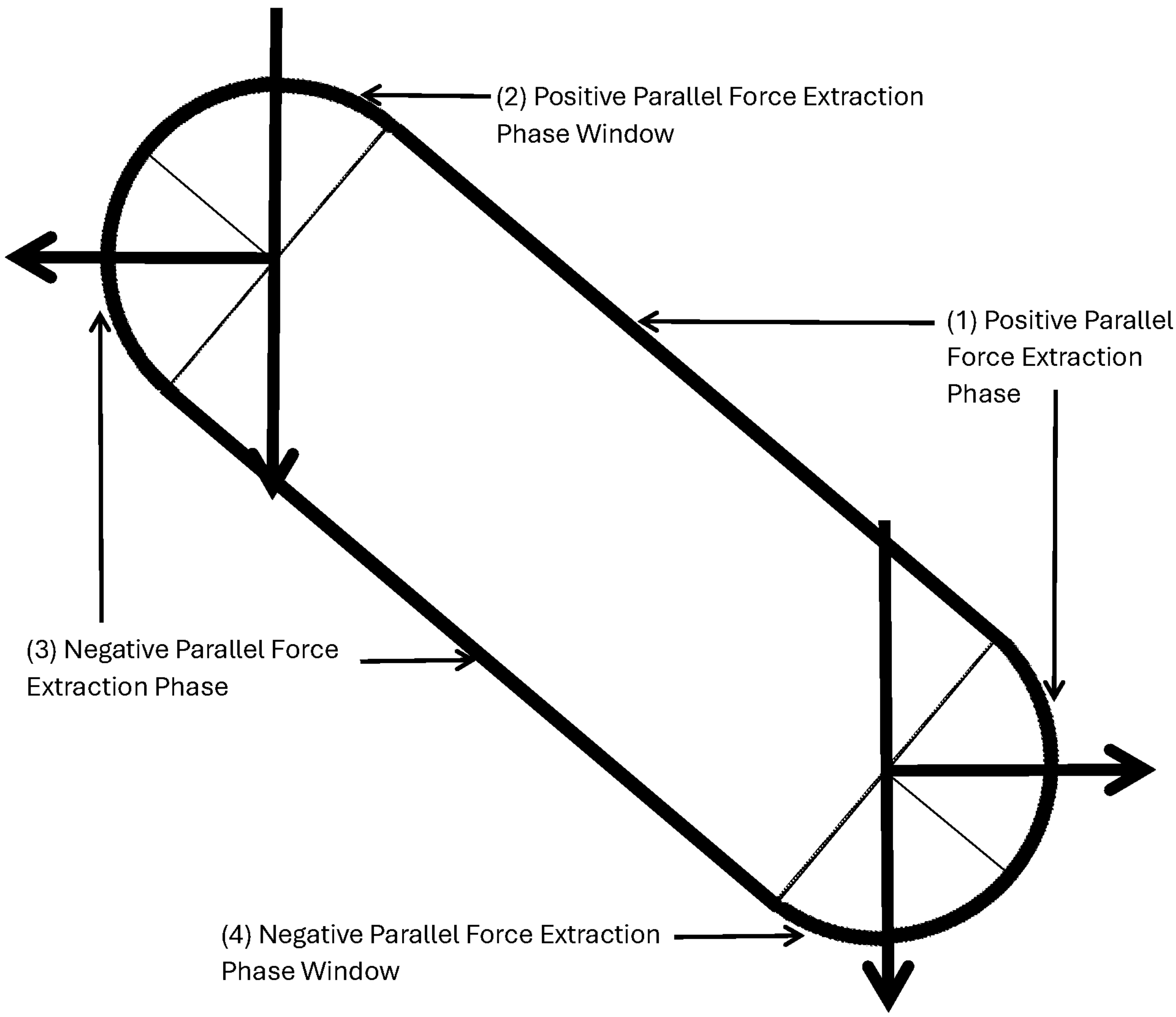
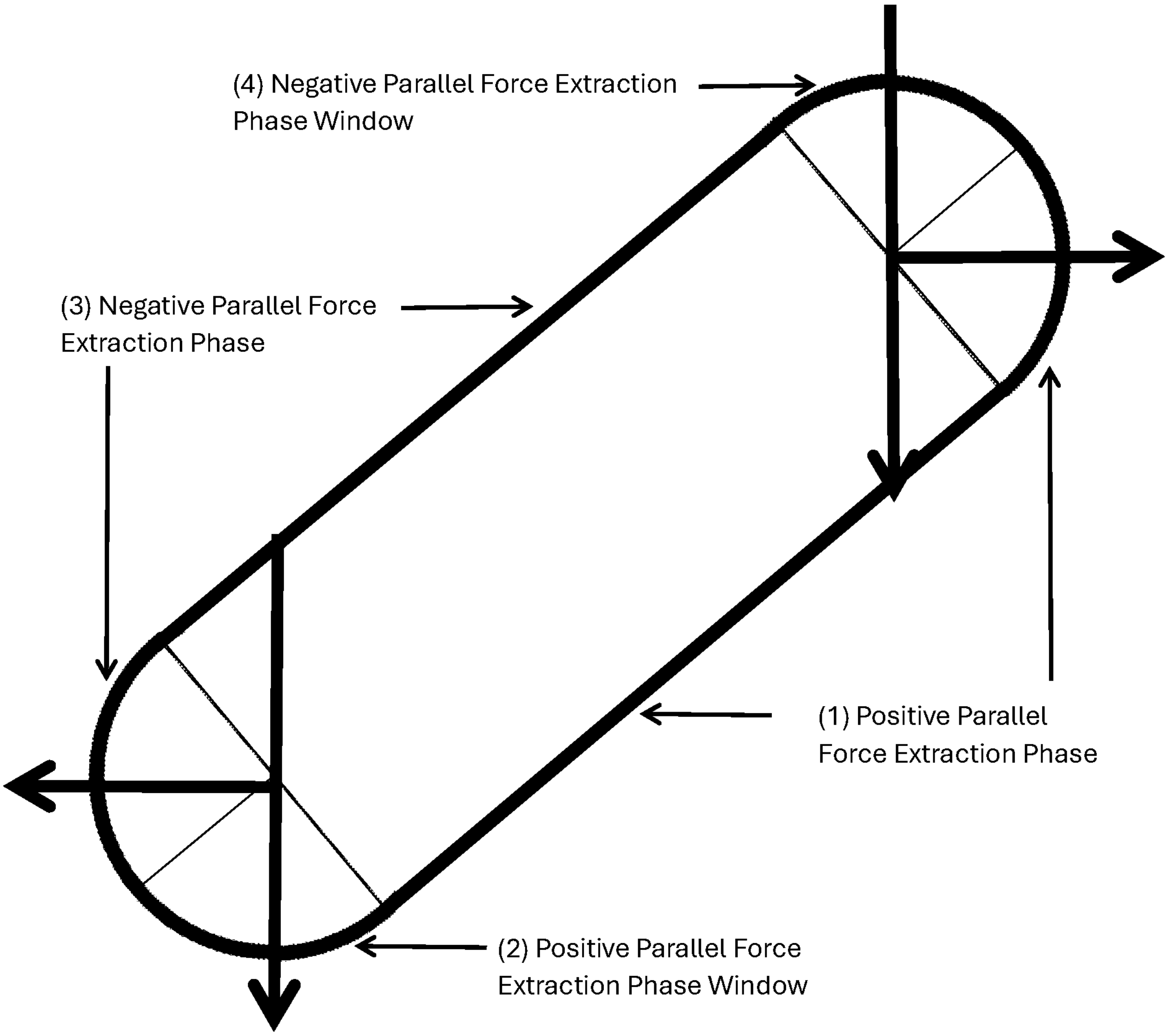


FIGURE 14 (c)


(4) Negative Parallel Force Extraction Phase Window
(3) Negative Parallel Force Extraction Phase
(1) Positive Parallel Force Extraction Phase
(2) Positive Parallel Force Extraction Phase Window

TITLE

METHOD FOR MANAGING AND EXTRACTING NON-LINEAR PARALLEL FORCE VECTORS IN A GRAVITATIONAL MECHANICAL ENERGY GENERATOR TRACK

FIELD OF THE INVENTION

This invention relates to the field of gravitational mechanical energy generation. More specifically, the invention relates to a method and system for the dynamic management and extraction of Parallel Force Vectors (Fp) acting upon a mass traversing a non-linear track. The invention provides a means for maintaining continuous rotational torque through the use of an operational performance simulator (OPS) and a velocity-dependent Track Arc Rotation (TAR) protocol to optimise force extraction across variable track geometries.

BACKGROUND

Traditional gravitational energy systems are predominantly based upon the principle of vertical mass displacement, commonly expressed as mgh (Mass * Gravity * Height). In such systems, energy harvesting is typically limited to the vertical descent of a mass, resulting in a static operational cycle. These systems inherently suffer from significant technical limitations; once the mass reaches its lowest point and comes to rest on a solid platform or support, the gravitational force is exhausted and can no longer generate mechanical energy. To continue operation, these systems require a substantial energy input to reset or lift the mass back to its starting height, making continuous generation nearly impossible.

The present invention departs from displacement-based harvesting by focusing on the Parallel Force Component (Fp). This component represents the gravitational force vector acting parallel to the instantaneous path of travel. While the parallel force remains stable on linear (straight) track sections, it becomes highly variable and non-linear as the mass enters a rounded corner or undergoes a track reconfiguration.

A primary challenge in continuous gravitational generation is the erratic nature of force vectors during these transitions. In specific geometries, such as a left-hand rounded corner, the mass - or a train of masses - encounters Mixed-Phase Zones. In these zones, different segments of the mass train may simultaneously experience opposing parallel force vectors, creating a mechanical conflict that often leads to a system stall.

Prior art fails to provide a mechanism for identifying the shifting maximum parallel force peak during a transition. Without a method to precisely calculate the effective parallel force angle and synchronize the track’s physical rotation with the mass's velocity, continuous operation remains unachievable. The present invention addresses these deficiencies by providing a multi-step calculation protocol to hunt and harvest the optimal force vector through all phases of the operational cycle.

BRIEF SUMMARY OF THE INVENTION

The present invention provides a method and system for achieving continuous torque delivery in a gravitational mechanical energy generator (GMEG) by isolating and harvesting the Parallel Force Component (Fp). The system is designed to overcome the limitations of static gravitational systems by utilising an Operational Performance Simulator (OPS) to manage force vectors dynamically, characterised by its ability to maintain operational momentum through Negative Zones and Mixed-Phase Zones by utilising a dynamic, velocity-dependent control protocol.

Key features of the invention include:

1. A Five-Step Transformation protocol to identify the true effective parallel force angle.

2. Management of Asymmetric Torque Zones (Surge vs. Mixed-Phase) within rounded track corners.

3. A Velocity-Dependent TAR Trigger to ensure mechanical transitions are synchronised with mass momentum.

4. The use of accumulated kinetic momentum and targeted energy injection to bridge negative force zones.

By tracking the parallel force vector rather than relying on vertical descent, the invention prevents system stalls and maintains continuous rotational inertia throughout the operational cycle.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 14 – Figure 14 illustrates the dynamic transformation of force vectors during a Track Arc Rotation (TAR) cycle, specifically showing the transition between slant-induced torque and horizontal apex positioning.

FIGURE 14 (a) illustrates the Horizontal Apex Transition (3), representing the 50% point of a TAR. This view demonstrates how the enabler train is distributed around the corner circumference (1,2) to maintain a non-linear gradient and avoid a horizontal stall.

FIGURE 14 (b) illustrates the Start of Revolution, showing the initial positive energy generation phases (1, 2) where the parallel force vector (Fp) is maximised on a downward slant. It identifies the Positive Parallel Force Extraction Phase Window (2) and avoids negative upward paths (3, 4).

FIGURE 14 (c) illustrates the Continuation of Revolution, showing the re-establishment of the positive slant and the transition of the mass back into a full positive extraction phase (1). It identifies the Positive Parallel Force Extraction Phase Window (2) at the exit and avoids negative upward paths (3, 4).

DETAILED DESCRIPTION OF THE INVENTION

The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the invention. As used herein, the term and / or includes any and all combinations of one or more associated listed items. As used herein, the singular forms a, an and the are intended to include the plural forms as well as the singular forms, unless the context clearly indicates otherwise. It will be further understood that that the terms illustrates and/or details when used in this specification, specify the presence of stated features, steps, operations, elements and / or components, but do not preclude the presence or addition of one or more other features, steps, operations, elements, components and / or groups thereof.

Unless otherwise defined, all terms (including technical and scientific terms) used herein have the same meaning as commonly understood by one having ordinary skill in the art to which this invention belongs. It will be further understood that terms, such as those defined in commonly used dictionaries, should be interpreted as having a meaning that is consistent with their meaning in the context of the relevant art and the present disclosure and will not be interpreted in an idealized or overly formal sense unless expressly so defined herein.

In describing the invention, it will be understood that a number of techniques and steps are disclosed. Each of these have individual benefit and each can also be used in conjunction with one or more, or in some cases all, of the other disclosed techniques. Accordingly, for the sake of clarity, the description will refrain from repeating every possible combination of the individual steps in an unnecessary fashion. Nevertheless, the specification and claims should be read with the understanding that such combinations are entirely within the scope of the invention and the claims.

In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be evident, however, to one skilled in the art that the present invention may be practiced without these specific details.

The present disclosure is to be considered as an exemplification of the invention and is not intended to limit the invention to the specific embodiments illustrated by the figures or description below.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

1. The Operational Performance Simulator (OPS) Environment

The present invention operates through a control logic defined by an Operational Performance Simulator (OPS). The OPS does not treat gravity as a static downward force; instead, it identifies the Parallel Force Component (Fp) as a dynamic variable that changes based on the mass's position on the track, the instantaneous slant of that track, and the operational state - such as in a static idle position or during a TAR where the system experiences a part-rotation.

1.1 Determining the Optimal Max Parallel Components (The Five-Step Transformation)

While a specific formula is disclosed, it will be understood that any mathematical equivalent or transformation that achieves the tracking of the parallel force vector across a track arc rotation falls within the scope of this invention.

As the enabler train moves, the system performs a continuous hunt for the maximum parallel force. During a transition, the position of the maximum parallel force on a rounded corner shifts across three key points:

The Entry Peak: (See Figure 14(b)) Identified at the start of the TAR when the track is at a positive slant degree.

The Apex Peak: (See Figure 14(a)) Identified at the centre of the rounded corner when the track is in a horizontal position.

The Exit Peak: (See Figure 14(c)) Identified at the end of the TAR when the track has reached its full negative slant degree.

To identify and track the max parallel force component during operation, the system uses a sophisticated transformation process to calculate the true effective parallel force angle:

1.1.1 Status Identification: The system identifies if the enabler is on a straight section or a rounded corner.

1.1.2 Circumference Mapping: If on a rounded corner, the system identifies the exact Enabler Circumference Position (m).

1.1.3 Angular Conversion: Distance is converted into an Enabler Position Angle (α) on the circumference.

1.1.4 Static Alignment: The system calculates a Static Effective Angle by combining the enabler's position angle with the current track slant.

1.1.5 True Vector Tracking: The system applies a 180-degree correction formula to determine the Actual Effective Angle for Parallel Force.

A key feature of the preferred embodiment is the use of the 180-degree correction formula. This allows the system to track the parallel force not just for one weight, but across the entire length of the enabler train. The Front-to-Back Train Tracking system calculates the force from the leading enabler at the start of the TAR to the trailing enabler at the end of the TAR. This prevents force-fighting within the train and ensures the system knows exactly how much torque is being delivered by the entire train as it transitions through the corner.

2. Managing Asymmetric Torque Zones

The invention manages different torque experiences identified by the OPS. The most complex part occurs in the Left Rounded Corner (Upward Path), managing the Mixed-Phase experience where the mass train is longer than a single point of force.

2.1 The Right Rounded Corner (The Downward Path)

This section is a downward path providing a fully positive but variable parallel force. Because the max parallel force shifts as the track slants, the system uses the GMEG generators and a Kinetic Energy Transfer System (KETS) to act as a brake. This manages the surge in torque and keeps the internal operational velocity stable to prevent runaway velocity.

2.2 The Left Rounded Corner (The Upward Path)

In contrast to the right corner, the 180-degree tracking is vital here. As the train enters, the OPS identifies a Positive Window equal to the track slant degree (Figure 14 (b) and (c)). During this window, the back of the train remains in a positive generation area while the front encounters an increasing negative climb. As the TAR progresses toward the horizontal centre, the entire train enters a Negative Zone. Finally, nearing the exit, it encounters another Positive Window where the front moves into positive generation while the back experiences a diminishing negative force.

The invention manages this by:

2.2.1 Identifying the exact degree-position where the force changes from positive to negative.

2.2.2 Utilising a Velocity-Dependent Trigger to ensure the machine has enough kinetic momentum to bridge the negative middle section.

2.2.3 Timing the TAR so the enabler train catches the positive entry window at the start of the TAR and the exit window at the precise moment the TAR concludes.

2.3 The Velocity-Dependent TAR Trigger

The transition is initiated when the centre enabler reaches the Trigger Point:

Trigger Point = Apex Distance - ((Operational Velocity * TAR Lift Time) / 2).

This guarantees the mechanical movement is perfectly centred over the physical centre of the rounded corner.

By utilising this calculation, the centre enabler reaches the apex (3) exactly halfway through the rotation cycle when the track is in a horizontal position (see FIGURE 14 (a)). Because the train is distributed around the corner circumference at this moment, the mass remains on a non-linear gradient rather than a static horizontal plane. This synchronisation ensures that no part of the enabler train is ever left in a zero-force state on a horizontal straight section, maintaining rotational inertia regardless of speed.

2.4 Strategic Technical Advancement

The main advantage is the active tracking of the highest gravitational pulling force. By knowing exactly when and where the parallel force changes, the system can plan to overcome system-stopper negative zones. In the left-corner climb, the invention utilises the accumulated kinetic momentum of the enabler train combined with a targeted energy injection during the TAR. This dual-action ensures the train successfully bridges the mixed-phase and negative zones, maintaining continuous operation.

CLAIMS

I hereby claim to have invented:

1. A method of controlling energy extraction from a multi-mass train of weights moving along a rounded rectangular track, characterised by calculating a parallel force component across the entire length of the train dynamically or in a time-series, and utilising said force tracking to simultaneously determine predictive trigger points for initiating a track arc rotation (TAR) and to provide a control signal to a kinetic energy transfer system (KETS) for velocity stabilisation.

2. A method as claimed in Claim 1, wherein the calculation of the parallel force component involves a multi-step vector transformation protocol to account for shifting mass positions and instantaneous track slant throughout the operational cycle, utilising a 180-degree correction to maintain a continuous force vector for the multi-mass train.

3. A method as claimed in Claim 1, for maintaining continuous operation through erratic force zones, characterised by identifying Mixed-Phase Zones in a rounded corner where different segments of the multi-mass train experience simultaneous positive and negative parallel force vectors relative to the track geometry.

4. A method as claimed in Claim 1, wherein the timing of the track arc rotation (TAR) is a velocity-dependent trigger calculated using a formula based on Apex Distance, Operational Velocity, and TAR Lift Time to synchronise the rotation with the momentum of the multi-mass train.

5. A method as claimed in Claim 3, for bridging negative torque zones in an upward-climbing rounded corner, characterised by utilising accumulated kinetic momentum combined with a targeted energy injection into the multi-mass train during the TAR to maintain the rotational inertia through the apex.

6. A method as claimed in Claim 1, further including a control logic environment (Operational Performance Simulator) that identifies positive windows at the entry and exit of a track transition to optimise energy extraction based on the tracking of the multi-mass train.

7. An anti-stall configuration for gravitational generators as claimed in Claim 1, characterised by distributing the multi-mass train around a non-linear corner circumference during a track reconfiguration, such that the total mass remains on a functional gradient and no part of the train enters a zero-force state on a horizontal plane throughout the transition.

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Amendment to the claims have been filed as follows

CLAIMS

I hereby claim to have invented:

1. A method of controlling energy extraction from a multi-mass train of weights moving along a rounded rectangular track, characterised by calculating a parallel force component across the entire length of the train dynamically or in a time-series, and utilising said force tracking to simultaneously determine predictive trigger points for initiating a track arc rotation (TAR) and to provide a control signal to a kinetic energy transfer system (KETS) for velocity stabilisation.

2. A method as claimed in Claim 1, wherein the calculation of the parallel force component involves a multi-step vector transformation protocol to account for shifting mass positions and instantaneous track slant throughout the operational cycle, utilising a 180-degree correction to maintain a continuous force vector for the multi-mass train.

3. A method as claimed in Claim 1, for maintaining continuous operation through erratic force zones, characterised by identifying Mixed-Phase Zones in a rounded corner where different segments of the multi-mass train experience simultaneous positive and negative parallel force vectors relative to the track geometry.

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Search report under Section 17 of the Patents Act 1977

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International classification

Subclass and subgroup	Valid from
F03G7/10	01/01/2006

Field of search

Worldwide search of patent documents classified in the following areas of the IPC:
F03G

Databases used in the preparation of this search report:
SEARCH-PATENT

Documents considered to be relevant

Patent literature

Category	Relevant to claims	Document of relevance
X	1-7	WO 2025/068667 A1 (FABER BAREND) – see whole document

Non-patent literature

Category	Relevant to claims	Document of relevance
A	1-7	31/12/1953, Wikipedia: Whee-lo, https://en.wikipedia.org/wiki/WHEE-LO, Whee-lo toy

Categories

Letter or symbol	Description
X	Document indicating lack of novelty or inventive step.

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Letter or symbol	Description
Y	Document indicating lack of inventive step, if combined with another document of the same category.
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P	Document published on or after the priority date but before the filing date of the present application.
E	Earlier application published on or after the filing date of the present application.