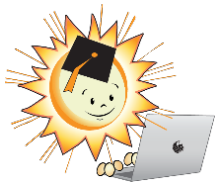

EnergyWhiz Virtual 2024
Energy Transfer Machine (ETM)
RULES

What is the ETM competition?

Energy Transfer Machine (ETM) is a competition showcased in a **virtual** format.

Student teams are challenged to transform everyday materials into unusual, Rube Goldberg-type machines that will accomplish a specified task using a variety of energy transfers. The team must also record a two-part video of their ET Machine performing its various energy transfers from start to finish, as well as a narrated introduction explaining the various transfers that are part of their machine. These are then submitted for judging on a team-created web page.

Who May Compete

Energy Transfer Machine is open to **students in grades 2 - 12**. Students may compete alone or in a team of up to 6 members. When the word team is used throughout this document, it applies to one or more students.

The competition is divided into four divisions. Teams of mixed grade levels will compete in the division of the highest-grade level student.

- Elementary (2nd & 3rd grade)
- Middle School (6th - 8th grade)
- Upper Elementary (4th & 5th grade)
- High School (9th - 12th grade)

Important Dates

Events	Date
Project Webpages Due	March 6, 2024
Evaluation (Judging)	March 8 – March 12, 2024
Projects Open for Public Viewing and Comments	March 13, 2024
Virtual Award Ceremony	March 15, 2024

NOTE: EnergyWhiz (EW) at FSEC will be held on **April 20, 2024.**

All ETM participants are invited to attend EW (in-person), where ETM videos from EnergyWhiz Virtual will be on display in the FSEC auditorium throughout the day.

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Machine Specifications

The size, shape and dimensions of the ET Machine are not limited. However, the ET Machine must be designed so that it is possible to take a video of the performance of the ET Machine as follows:

- From start to finish
- From a single camera shot
- Without using cuts or edits

Your ET Machine shall:

	Perform a team-specified action at the one (1) minute mark as its final task.
	Have a **minimum** of five (5) energy transfers in completing its team-specified task.
	May include (1) energy transfer powered by electricity provided by one or more batteries (not to exceed a total of 9 volts).
	Be constructed solely of parts provided by the team. ***Note**: Individualized components may be purchased, but the entire machine must be designed, assembled and when possible, fabricated by students. Team members must make all component and fabrication choices.*
	Be safe and not pose harm to anyone or anything.
	Not use any actual timing devices manufactured for that purpose.
	Not use animals, hazardous materials, explosives, or flames.
	Not imply nor convey profane, indecent, or lewd expressions.

The machine may use programmable logic controllers or any other electronic controller; however, the programmable logic controller must not use any internal timer.

Video Specifications

Video consists of two parts to be submitted as separate videos:

1. Narrated introduction
2. The machine run

Narrated Introductory Segment

At least one team member is required to clearly narrate and be on-screen in the introductory segment, which may be edited and/or pieced together. This segment **should not exceed three minutes** or points will be deducted. A non-team member may do the recording, but non-team members on-screen will result in disqualification.

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1. Narrated Introductory Segment - The following items are required in this video portion: ***** This segment **should not exceed three minutes** or points will be deducted	
	State the Team, Project or Machine Name.
	State the Name of the School.
	Describe each transfer while pointing to the machine part associated with that energy transfer.
	State what the machine will do as its final task at the 1-minute mark.

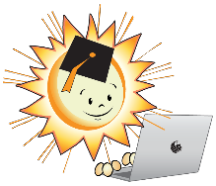
Machine Run

Submit your best ETM run (from start to finish, with no edits) for judging. Take advantage of the opportunity to record your machine multiple times to get the best representation of your machine's performance.

2. Machine Run - The following are required when documenting the performance of your ET Machine:	
	State "Ready, Set, GO!" and timing begins. The clock will be stopped, and time recorded when the final task occurs. **Try to make your machine run as close to one minute as possible.** If any team member interacts with, interferes, or assists their ET machine once time clock has started, the machine timing (for the precision score) will stop. However, judging for other criteria continues.
	Video in one take. No edits are allowed to the machine portion of the video from the point where the narrator says, "*Ready, Set, Go*", to the completion of the ET Machine's final task. **Any edits to this portion of the video will be grounds for disqualification.**
	Post videos to website. The two videos (narrated introduction and machine run) will be posted separately on the team's web page using the built in Vimeo uploader (see EnergyWhiz.com for instructions).

<u>Tips for better quality ETM videos</u>

- **Wide Screen Video:** If using a phone to record, turn the phone on its side. Wide screen videos offer a better viewing quality/experience.
- **Speak up:** Pretend you are on a stage and you need to talk to a person at the back of the auditorium. Speak clearly and limit/eliminate background noise so the judges can hear you.
- **Light it up**: Turn on all available lights in the room where you will be filming your videos. If you are outside, make sure the sun is to the back of the camera operator.
- **Settings:** Record the video at the largest size and highest quality settings available.
- **Exporting Video:** When you export the video(s), don't compress too heavily. Upload a large video file to maintain the quality.



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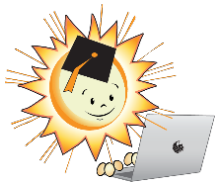
Web Page

Each team will populate a web page on the virtual EnergyWhiz site (using WordPress) that showcases their Energy Transfer Machine. These pages will be used to judge the project, and will be viewed by other students and the public. The web page **must include the following** (minimum requirements)**:**

1. Photo & Basic Info	
	Team, project or machine name
	Name of the School
	First name(s) and **last initials** of students on the team (**no last names on the public page**)
	Grade level of each team member
	A still photo, possibly a close-up of one section of the ET Machine (this will be the thumbnail for your page). Be sure the project close-up photo is clear/visible.
	List the number of energy transfers that take place.
2. Design Documentation	
	Photos: **A minimum** of four close-up photos, highlighting parts of the ET machine to showcase.
	A list of the tasks/energy transfers that your machine goes through.
	A statement of what your machine's final task is (for example ringing a bell, raising a flag, etc.)
3. Narrated Introductory Segment & Machine Performance Videos	
	The videos will be included in your web page and hosted on our Vimeo site.

Teams are encouraged to use the judging criteria as a guide to what extras they may want to include in their web page. For example, the web page **may** include:

- an explanation of the theme used in the machine
- extra photos of the construction process
- team explanation of the challenges encountered while building or testing their machine
- drawings made during the planning stage of the layout of the machine
- list of internet sites and/or videos watched to get ideas for their machine
- explanation of unusual parts or segments constructed by the team members for the machine
- any items that the team feels will showcase the complexity of their machine, or be helpful to the judges to pick them as the winning team!



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Evaluation & Judging Criteria

All project judging for ETM is completed online. ETM pages will be available for public viewing after judging is finalized. Teams are encouraged to share their web page address with family, friends, and teachers. Please visit other team pages and provide positive comments on their ETM projects, too.

1st - 3rd Place Awards: Offered to top scoring teams in each division.
1st Place Precision Award: Awarded to the team who's ETM has the closest run time to 1 minute.

The judges will base their scores on the following:

CATEGORY	MACHINE DESIGN	MAX POINTS
Precision:	How close to the 1-minute mark was the machine run? Time _____ Starting at a full score (25), judges will subtract 1 point for each second from the 1-minute mark in either direction.	25
Complexity:	How complex is the machine? Does the machine make use of more complex energy transfers than just domino runs and marble ramps?	15
# of Transfers:	How many energy transfers does the machine use? Was there diversity of the types of energy transfers within the machine?	15
Craftsmanship:	How well is the machine constructed? Is it visually appealing?	12
Creativity:	How creative is the machine? Does it use unusual materials? Does the machine have a theme? Is it interesting?	13
	Machine Design SCORE	80

	PRESENTATION	
Communication:	Did the team explain their device clearly? Was the description easy to follow and understand?	10
Web Page Creativity:	Is the web page arranged well? Does it show creativity? Is it enjoyable to view?	5
Video:	Are the video presentations clear, easy to watch, and close enough to see what is happening? Is the audio clear void of excessive background noise and not muffled? Did the team fulfill the video requirements?	3
Web Page Completeness:	Does the web page include the required information?	2
	Presentation SCORE	20
	FINAL SCORE	**100**

GOOD LUCK TO ALL ETM TEAMS!