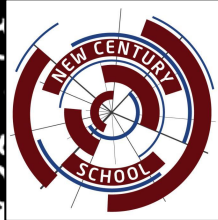


ENGINEERING
MACHINE DESIGN CONTEST
MANKATO 2022

TEAM PEACE ENERGY



ENGINEERING
MACHINE DESIGN CONTEST

PEACE ENERGY

OUR TEAM

Ahmed Hidig - 8th Grade

Ahmedsadiq Abdi - 6th Grade



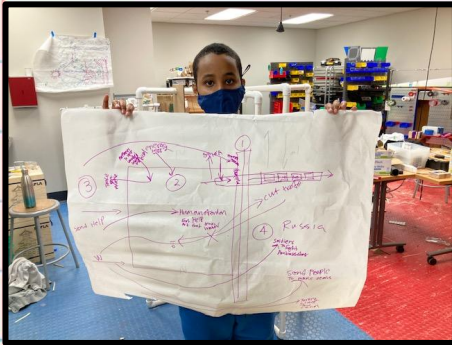
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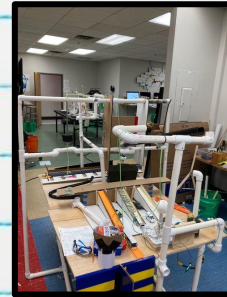
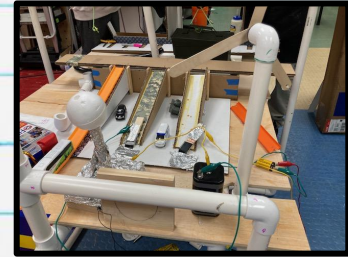
Peace Energy

Russia is attacking innocent Ukrainian people and their home land . What our machine is doing is it is helping these innocent Ukrainian people and its punishing Russia in peaceful ways like sanctions. But when Russia gets out of control that's when our machine Strikes!!

Our Plan



Our machine starts when a fellow team member lets a steel ball go down a ramp to release a pulley that's holding a cartridge. Then the cartridge on the pulley drops on top of a lever which sends the oil back to the refinery. While that is happening the cartridge also lifts pucks which are tied to a lever hinge which then releases refugees, humanitarian, and military aid down an inclined plane.



Problem our Machine is Solving

Ukraine is dependent on Russian oil. Ukraine buys that oil from Russia then Russia uses the revenue to build their tanks and military power. The more oil Ukraine buys, the more Russia becomes bigger and badder. The European Union (EU) will help Ukraine create alternative/renewable energy - like windmills and solar panels! Ukraine will be Energy independent! so not buying Russia's oil makes its military weaker and the EU more stable so it can stop the attack on Ukraine.

Step 1

EU is in!!!

Kapla fall on each other with flags of the EU on them.



I have two questions : do you believe in oppression or liberation? Sadness or happiness? Russia is oppressing Ukraine. We will not just sit there and watch, we will act. Imagine if 27 European countries came together some of which were oppressed by Russia including Poland. In fact six million polish jews were killed in the second world war . what if these countries come and help. First Greece says yes, then Poland, then Romania, then Slovakia..... The entire European union.

Then Russia will back off from our Ukrainian friends. This whole world is a family of black ,white, Hispanic, Asian, German, French..... we're all a family, we help and those who oppress are outlaws but they are still family. We can change them in peaceful ways. If we punish harshly then Russia will want revenge but if we come in peace we can soften Russia's heart and we can warm up its cold heart.

Russia is rusty not musty all we need to do is polish them.

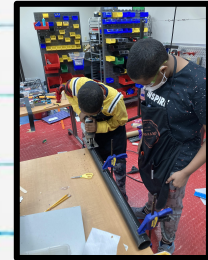
Step 2

Help Is on the Way!

The ball rolls down the inclined plane.



Inclined plane



We tested a wooden block as a rest for the ball ramp. Unfortunately it did not work but the drilling and building was fun.

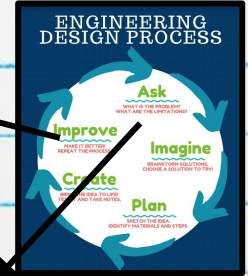
Step 3

Military Aid Is Here

The Ball releases the pulley and sends military aid to Ukraine.



We improved the plan by taking off weight (pucks) on the other side of the pulley.

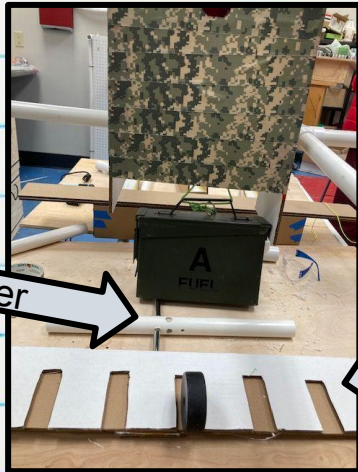


We asked how can we calibrate the weight of the military aid so that the weight on the other side (oil supply) is released.

Step 4

Get Rid of the Oil Part 1

So the military aid drops and activates a lever to shut down oil production.

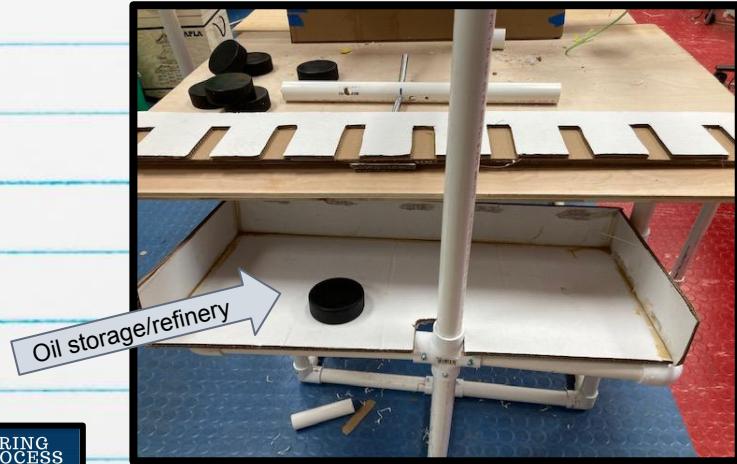


The ammo box (released by the pulley) activates the lever that sends the barrels of oil (pucks) back to the refinery.

Step 5

Get Rid of the Oil Part 2

The oil is released from the refinery on an inclined plane.

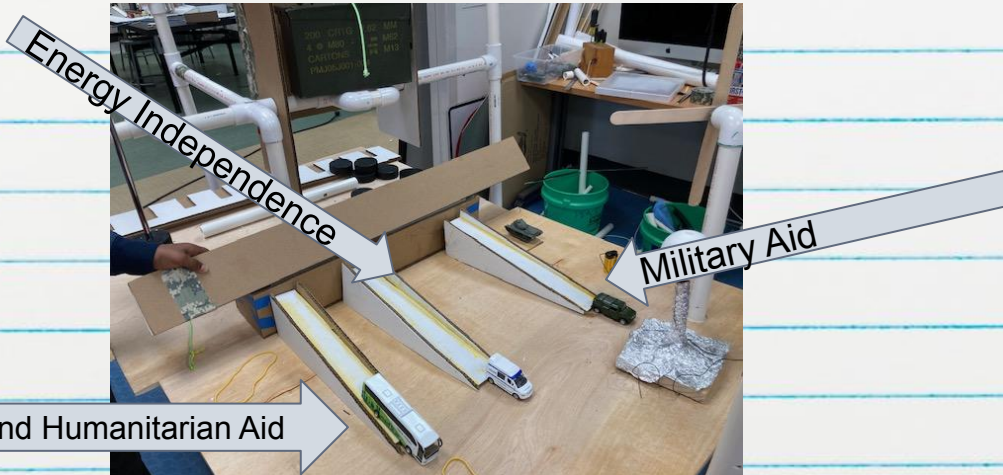


We planned a way to catch the oil barrels (pucks) when the lever released them.

Step 6

Help Is On The Way

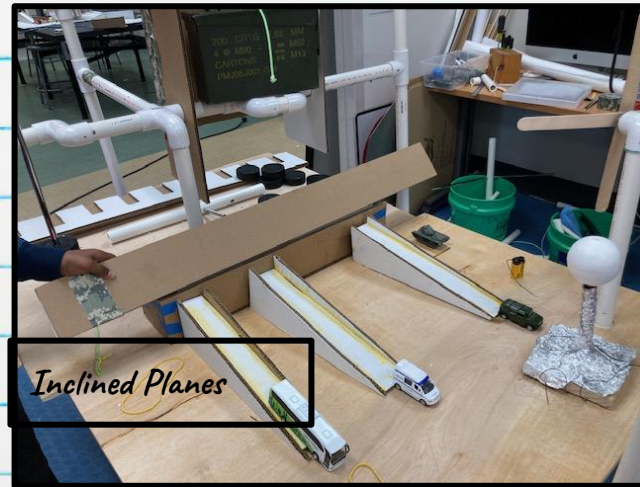
The pucks lift a lever-hinge which then releases cars onto an inclined plane.



Step 7

Ramping Up!

*The lever-hinge pushes the
aid vehicles go down inclined
planes.*

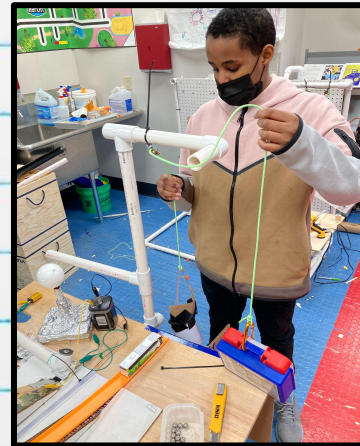


Step 8

First Aid for All!

The Refugee and Humanitarian Aid Bus tips a First Aid Kit onto a secured route.

Once the bus is released down the inclined plane, it hits a ball that falls into a cup attached to a pulley system. The mass of the ball causes the cup to fall and the first aid kit rises because of the unbalanced weight.



Step 9

Let the Winds Blow!

The Energy Truck engages a wind turbine providing for energy independence in Ukraine.

The truck activates an electrical circuit controlled by a Switch. The switch turns on a motor that makes the wind turbine spin.



Step 10

Nuclear Emergency!

The military tank activates an electric switch that turns on a motor in the nuclear plant.



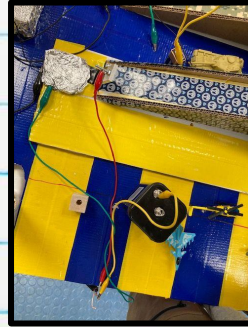
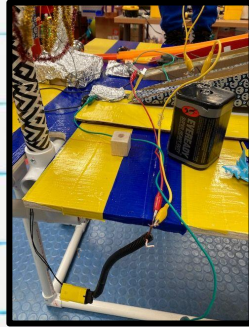
Electric Switch

ADVANCED COMPONENTS

ELECTRIC SWITCH TO
ACTIVATE NUCLEAR
PLANT MOTOR



ELECTRICAL CIRCUIT
CONTROLLING ELECTRIC
SWITCH THAT ACTIVATES
THE WIND TURBINE



PULLEY SYSTEM TO ACTIVATE
MILITARY AID BOX

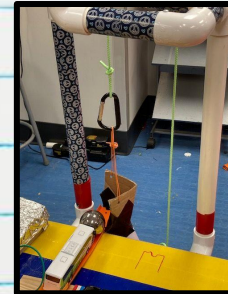


LEVER
HINGE TO
RELEASE
AID
VEHICLES



CHAIN REACTION OF EU
FLAGS TO RELEASE BALL

PULLEY SYSTEM TO
ACTIVATE FIRST AID
KIT



CHALLENGES AND SUCCESSES

Feisal: our greatest challenge was getting the pulley to lift up the pucks then connect to the hinge to release the cars to go back to ukraine.

Our greatest success is getting the military aid to fall on to the lever to send the oil back to Russia..

Ameed: Our problem was the Pvc-pipe's kept on getting out of the Pvc-joint's. So we Drilled and screwed them together.

Our Accomplishment is taking our machine apart and putting it back together will be easy.

Challenges and Successes 04/20/22

Ahmedsadiq: After Mankato our challenge was an electric switch controlling the motor for the wind turbine and the flags. So we improvised and said some one will do the flags while someone else works on the switch. When we took apart the motor case, we found that it was clogged with a bunch of tape and switch was not connecting with it. We built a new motor case that worked. We corrected the Kapla flag sequence by stabalizing each block with more tape.

Component	Description	Cost	Quantity	Total	Type	Reusable
PVC Elbow	90 degree PVC Elbow	\$0.64	16	\$10.24	EMC Component	✓
PVC Elbow	side outlet PVC Elbow	\$3.74	5	\$18.70	EMC Component	✓
PVC 'T'	side outlet PVC Elbow	\$0.82	13	\$10.66	EMC Component	✓
PVC Pipe	10 feet piece	\$3.97	0	\$0.00	Recycled	✓
Peg Board	12x48 sheet	\$15.21	0	\$0.00	EMC Component	✓
Screw #10 x 3/4 in.	25-Pack	\$3.86	1	\$3.86	New	✓
Hockey Puck	Small Cylinder shape	\$0.40	14	\$5.60	New	✓
Ammunition box	Box like shape but taller	\$10.00	1	\$10.00	Donated	✓
Pulley	Holds heavy object	\$3.65	2	\$7.30	New	✓
Rod	Good conductor of meal	\$0.00	3	\$0.00	Recycled	✓
Kapla blocks	similar to jenga		12	\$0.00	Recycled	✓
cardboard					Recycled	✓
tape	different colors	\$3.69	5	\$18.45	New	✓
string				\$0.00	Salvage	✓
vehicle		\$2.20	12	\$26.40	New	✓

Team Reflection (03/24/22)

By: Ameer

The first time we heard about Mankato and that there are four teams going to Mankato, we were excited. We were like what's the theme? Dr Blue said "Energy". We were like what's going on in the world? My friend was on his computer looking at daily news and I saw Ukraine and Russia and I was like this is our theme! We will bring awareness to Ukraine. I selected a very smart group but the first week we were a bunch of squirrels running around like lunatics. But the next week we were in focus mode. No playing around! One of my friends told a funny joke and we were zoned out for a whole day. Then I told them to stop. Then we started drilling, screwing, and building and glueing until we had 10 steps. Then we were on our reflection on the technical writing.

I Learned a Lot from working with my teammates.

Ahmed Hidig: was funny and couldn't reach high places.

Ahmed Sadiq was very smart. He took credit for everything.

Faisal: Very good at drilling was not good at electronics.

Myself: Hard working but easily distracted.

Team Reflection (cont)

04/20/22

(Ahmed Hidig)

Two team members dropped out because of their behavior and they were not doing good for other teachers. They just did good in dr. blue's class and unfortunately they were removed from the team by the dean. I hope they learned their lesson on how to show respect to everyone.

Me and my team member Ahmedsadiq were the only ones remaining. We had to improve our machine and move on because we had nothing to wait for.

Our machine looked so basic and plain in the first competition, Now it looks magnificent and it works consistently.

(Ahmedsadiq) I feel upset that our teammates dropped out, but I stayed strong and worked our way up through the machine. I hope they come next and be respectful so they don't get kicked out again. The look of our machine is better than last time and we improved some of the parts like the kapla flags.

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"Engineering Simple Machines: Wedge and Wheel & Axle": University of Minnesota Extension

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"Engineering Simple Machines: Inclined Plane and Pulley": University of Minnesota Extension

Critique and Feedback-The Story of Austin's Butterfly by Ron Berger

<https://www.youtube.com/watch?v=hqh1MRWZjms>

Meet Our Partners

Great River Energy



Tesla - Rogers, MN

