

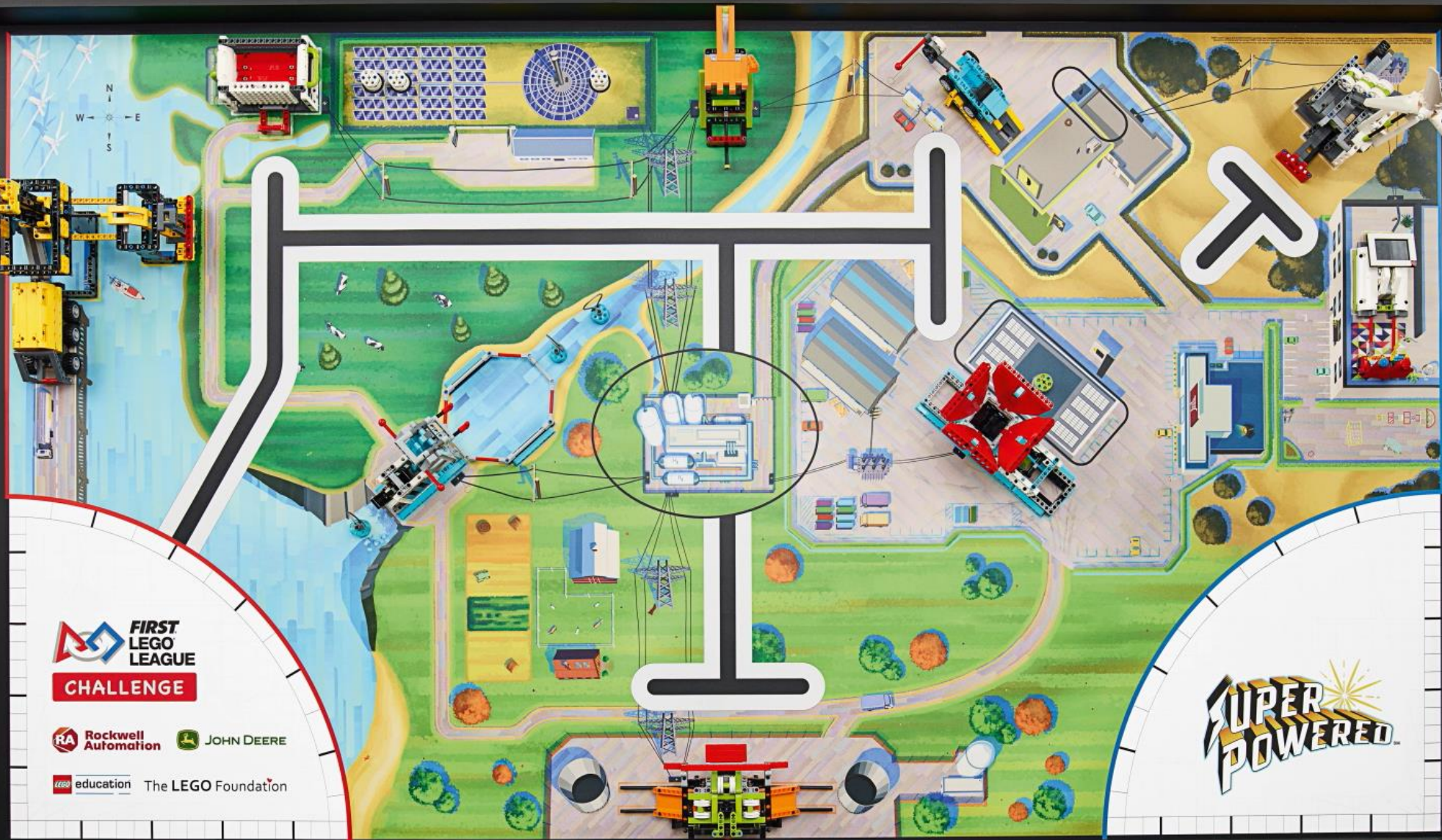


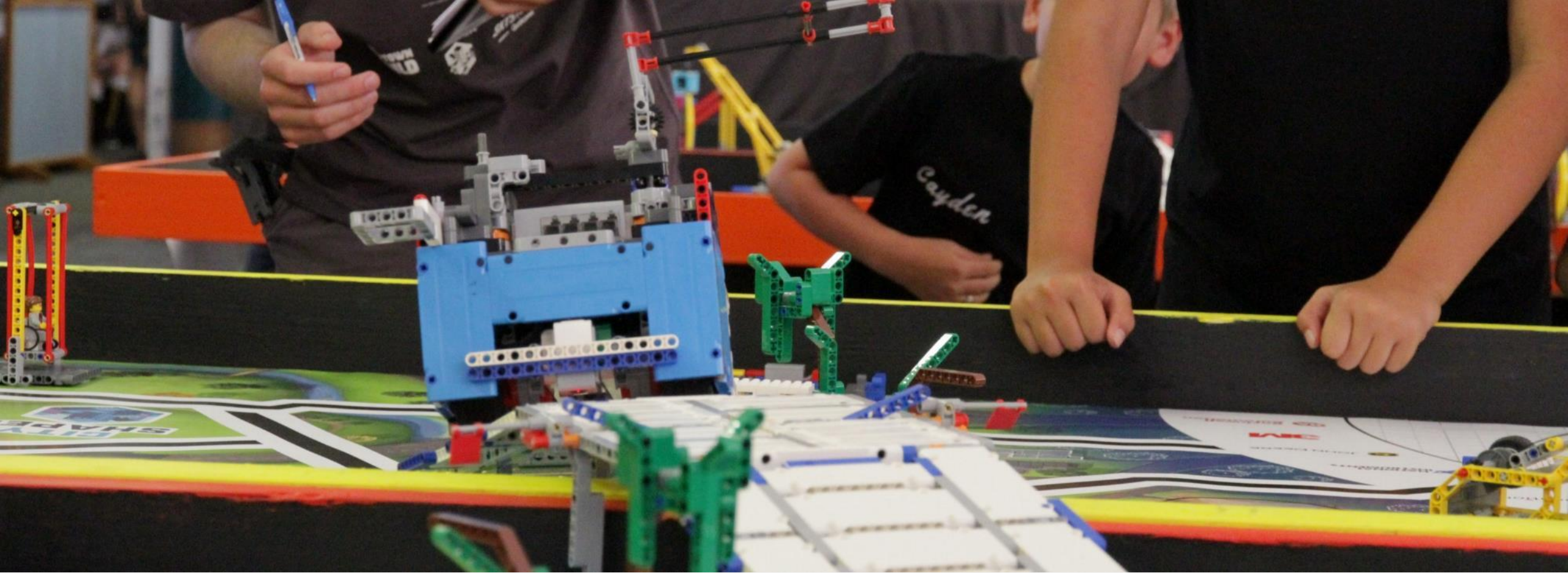
Part #5: Robot Game



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Robot Game: Important Rules



You MUST read the Robot Game Rules to understand the game completely

However, here are the top rules that cause problems...

Robot Game Rulebook - Direct Wording Excerpts (Pg 16)

- All Robot Game wording means precisely and only what it says.
- If a detail is not mentioned, it does not matter.
- Challenge Updates may change wording.
- If a situation arises that makes the referee's decision unclear or hard to call, you get the **benefit of the doubt**.
- Head Referee makes the final decision.

The Home of Loopholes!

Look for hidden freedoms in the Mission Text
Beware of "Captain Obvious"

Robot Game Rulebook – Equipment/Control (Pg 17)

- Teams can use any software or programming language. Robots must be autonomous during the match.
- No remote controllers of any type are allowed.

Be Careful...

- No laptops/tablets at Robot Game
 - Turn off Bluetooth on Hubs
 - IR Sensors are not allowed

Robot Game Rulebook (pg. 24)

If you compete, remember that volunteers work hard to get the fields just right, but you should expect and design for rare imperfections, like bumps under the mat or changes in light.

Beware!

- Tables can be slightly different widths
- There are (legal) variances in wall height
- Mats do **not** have to be taped down, but if they are, they must follow specific rules (see Point #4, Pg. 24)
 - Do not depend on wall width or anything outside the table
 - Competition Mats are brand-new (and not worn down)

Before The Match – Equipment (Pg 17)

LEGO building pieces only...

- **Controllers:** ONE individual controller in any one Match...
- **Motors:** Any combination, max of four in any one match.
- **Sensors:** Any Touch/Force, Colour, Distance/Ultrasonic and Gyro
- **Parts:** No limits on non-Electric LEGO pieces

Read Pg 17 carefully!

- Extra Controllers or Motors must be left in the Pit
 - 4 motors only (and **only** the allowed types)
 - No IR Sensor

Problem even at Internationals!

Mission Models (Pg 20 and Updates)

- Taking apart a Mission model (even temporarily) is not allowed.
- Twisting or rotating Mission Models is allowed, provided they stay intact (e.g. a Loop)
- If you combine a mission model with anything (including the robot), the combination needs to be loose or simple enough that, if asked to, you could free the mission model in perfect original condition immediately.

Read carefully!

This is even a problem at Internationals

Before The Match - Setup (Pg 18)

After Inspection, you are guaranteed **2 min** to prepare for Game Start. Use this time to:

- Set up for first Launch
- Position Equipment in either Home area
- Ask the Ref to be sure a Mission Model or setup is correct
- Calibrate/reset sensors anywhere you like.

Be aware of time limits!

- Get your team to practice setup in 2 min
- Do not touch the field without permission

During the Match - Launch Area (Pg 19)

To Launch:

- the robot and ***everything it is about to move*** must fit in a Launch Area. **Note: the area ends at the edge of the mat and does not extend over the wall.**
- Technicians cannot be keeping anything from moving



Robot Game Rules: Interruption/Stranding (Pg 20)

If Robot is interrupted...

...with Object from Field

- Completely In Home: Keep it
- Not Completely In Home: Referee takes it

...with Object from Launch

- Keep it

If Robot drops something...

(Once it has come to rest)

- Completely In Home: Keep it
- Outside Home: Stays as it is unless robot changes it
- Partially in Home: Stays as it is unless robot changes it **OR**
Pick it up and lose a Precision Token

Match Sequence

1. Arrive at Table.
2. Inspection: All Equipment must be in one or both of the Launch Areas and under the height limit. **(Pg 18)**
3. After Inspection: Arrange all equipment in the Home Areas. Calibrate, Inspect, and prepare for Launch **(Pg 18)**
4. Technicians: Divide Team into two groups, one for each Home Area
5. Pre-Launch: Robot and everything it's about to move must be completely in Launch Area and not being held **(Pg 19).**
6. In-Match: Robot can Launch from either Launch Area and move objects between them **(Pg 6)**
7. In-Match: Interruption outside of Home loses a precision disc **(Pg 15)** but Robot can be returned to either Launch area.
8. At end of Game (or end of missions) Robot is stopped **(Pg 20-21).**
9. Technicians (**not coaches**) sign off on final Score **(Pg 21)**

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Robot Game: The Missions

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Equipment Inspection

If your robot and all your equipment fit completely in **one** launch area and are under a height limit of 12 in. (305 mm) during the pre-match inspection (**20 pts**)



Important!

You can hold Equipment in place during Inspection
You can spread out your Equipment after Inspection

Mission 01: Innovation Project Model

If your Innovation Project model is at least **partly** in the hydrogen plant target area. (10 pts)

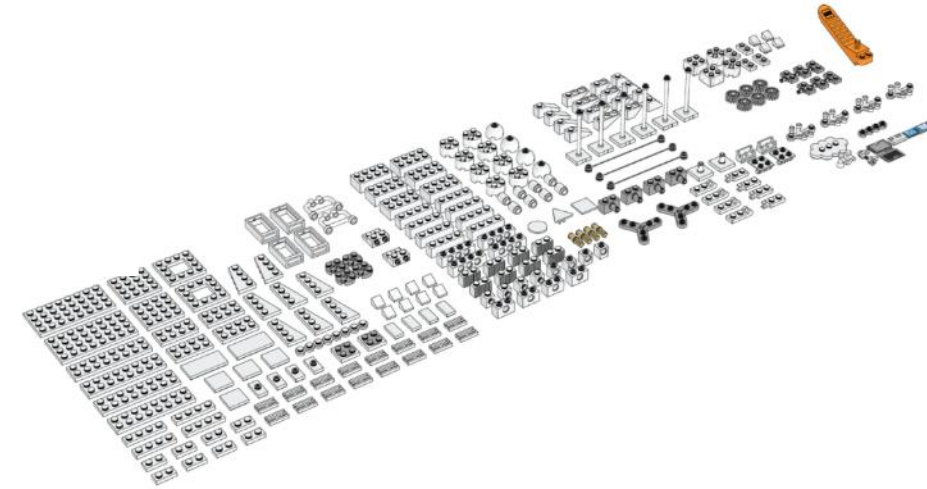
Restrictions:

Design and bring a single Innovation Project model of your own to the match. It must:

- Be made of 2+ white LEGO pieces
- Measures at least as long as four LEGO studs in some direction

The Model is Equipment!

+10: Partly In target area

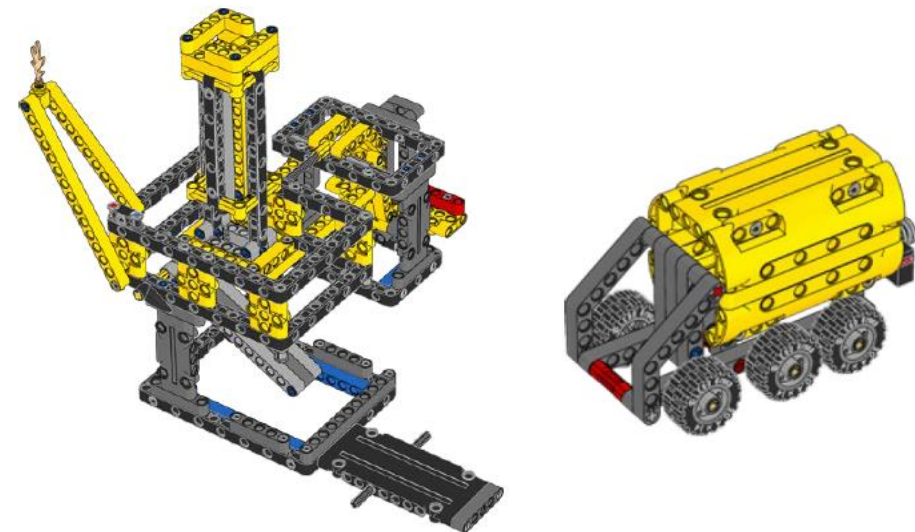


Mission 02: Oil Platform

- If a fuel unit is **in** the fuel truck. (5 pts each)
- **Bonus:** If at least one fuel unit is in the fuel truck and the fuel truck is at least **partly over** the fueling station target: (10 pts)

Restrictions:

N/A



+5: Each Fuel Unit in Truck
+10: Truck over Target

Max: 25 pts

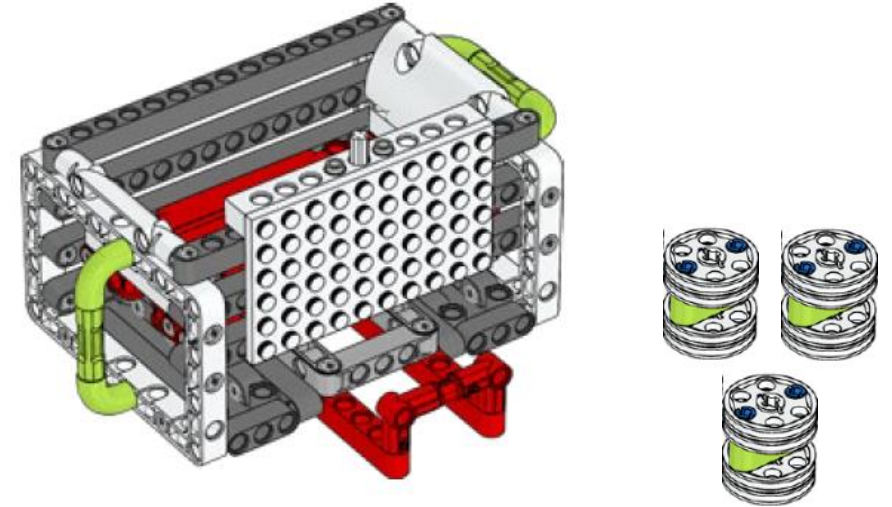


Mission 03: Energy Storage

- If an energy unit is **completely in** the energy storage bin (max of three) (10 pts each)
- If the energy unit is **completely removed** from the energy storage tray (5 pts)

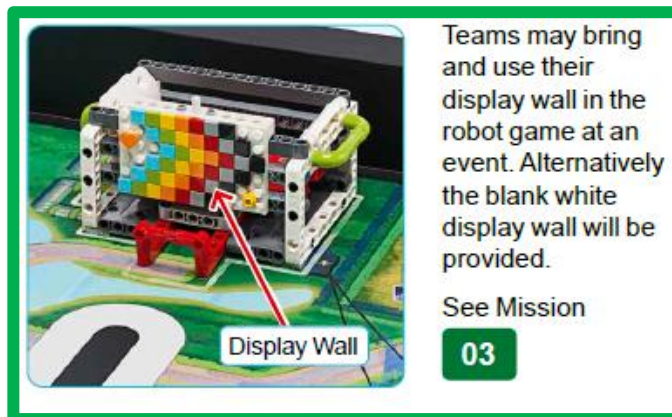
Restrictions:

All energy units stored in the energy storage bin may not be touching team equipment at the end of the match.



+10: Energy Units in Storage Bin
+5: Energy Unit Removed

Max: 35 pts



Mission 04: Solar Farm

- If an energy unit has been **completely removed** from its starting circle (5 pts each)
- **Bonus:** If all three energy units have been **completely removed** from their starting circles (5 pts)



Restrictions:

N/A

+5: Energy Units Removed

+5: Bonus

Max: 20 pts



Mission 05: Smart Grid

- If your field's orange connector is **completely** raised (20 pts)
- **Bonus:** If both teams' orange connectors are **completely** raised (10 pts)

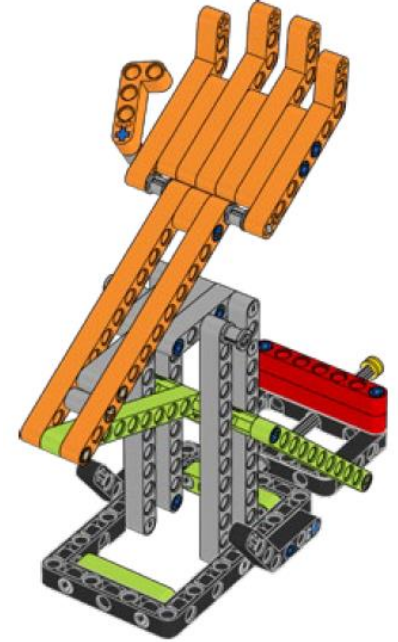
Restrictions:

The smart grid model may not be touching team equipment at the end of the match

Robot Rules (Pg 20): Teams may not interfere with the opposing field or robot unless there is a mission exception. Points failed or lost due to interference will score automatically for the other team.

+20: Connector Raised
+10: Both Connectors Raised

Max: 30 pts



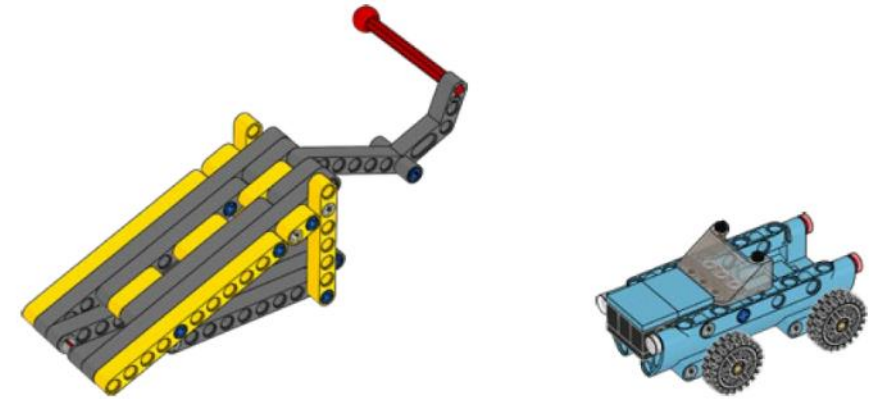
Mission 06: Hybrid Car

- If the hybrid car is no longer touching the ramp (10 pts)
- If the hybrid unit is in the hybrid car (10 pts)

Restrictions:

N/A

Note: Hybrid Unit is NOT an Energy Cell



+10: Car off Ramp
+10: Unit in Car

Max: 20 pts



Mission 07: Wind Turbine

- If an energy unit is no longer touching the wind turbine (10 pts each)

Restrictions:

N/A



+10: Energy Units not touching Turbine

Max: 30 pts

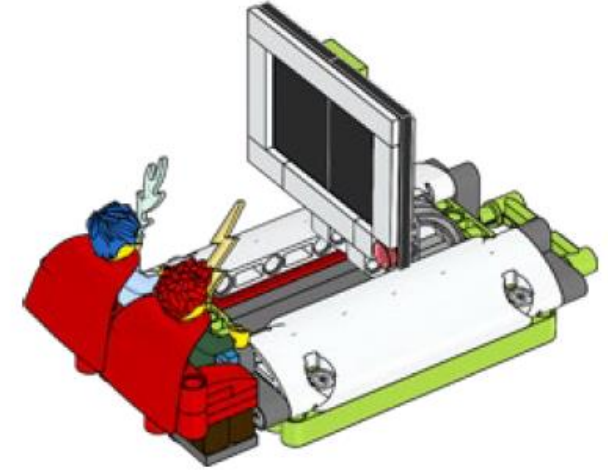


Mission 08: Watch Television

- If the television is **completely** raised (10 pts)
- If an energy unit is **completely** in the green television slot (10 pts)

Restrictions:

The watch television model and the energy unit in the green television slot may not be touching team equipment at the end of the match.



+10: Television Raised
+10: Energy Unit in Slot

Max: 20 pts



Mission 09: Dinosaur Toy

- If the dinosaur toy is **completely** in the left home area (10 pts)
- If the dinosaur toy lid is **completely** closed **AND**
 - there is an energy unit inside (10 pts) **OR**
 - there is a rechargeable battery inside (20 pts)

Restrictions: N/A

Robot Rules (Pg 6): During a match, only the robot can move objects from one home area to another. When a robot is interrupted, it can be returned to either area.

Robot Rules (Pg 19): Technicians may use their hands on the robot, equipment, and mission models when these are completely within their home area.



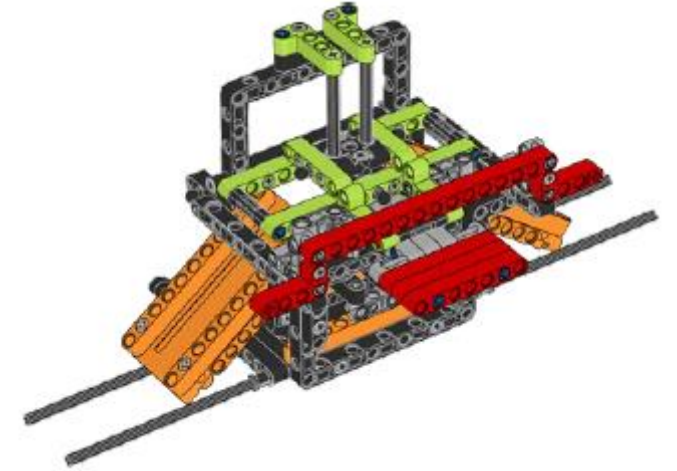
+10: Toy in Left Home
+10: Energy Unit in Toy
OR
+20: Rechargeable Battery in Toy
Max: 30 pts

Mission 10: Power Plant

- If an energy unit is no longer touching the power plant (**5 pts each**)
- **Bonus:** If all three energy units are no longer touching the power plant: (**10 pts**)

Restrictions:

N/A



+5: Each Energy Unit

+10: Bonus

Max: 25 pts

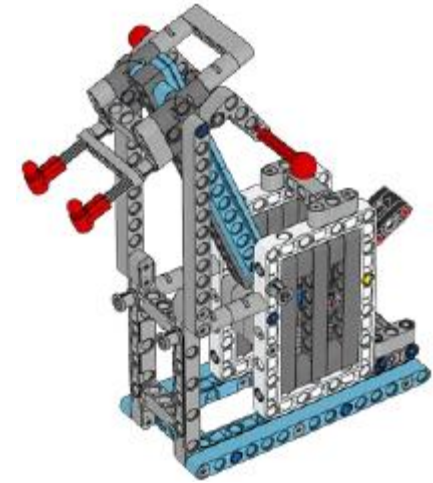


Mission 11: Hydroelectric Dam

- If the energy unit is no longer touching the hydroelectric dam (20 pts)

Restrictions:

N/A



+20: Energy Unit

Max: 20 pts



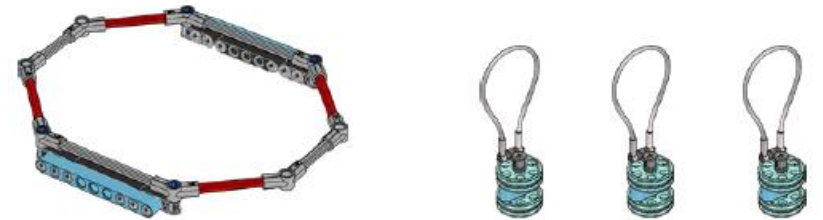
Mission 12: Water Reservoir

- If a looped water unit is **completely** in the water reservoir, **touching** the mat (5 pts each)
- If a looped water unit is placed on a single red hook (10 pts each Hook)

Restrictions:

The loop on the looped water unit may extend out of the water reservoir.

Looped water units in the water reservoir or on red hooks may not be touching team equipment at the end of the match.



+5: Water Unit in reservoir
+10: Water Unit on hook

Max: 25 pts



Mission 13: Power-To-X

- If an energy unit is **completely** in the hydrogen plant target area (max of three) (**5 pts each**)

Restrictions:

Note: No equipment restriction



+5: Water Unit in reservoir
+10: Water Unit on hook

Max: 25 pts



Mission 14: Toy Factory

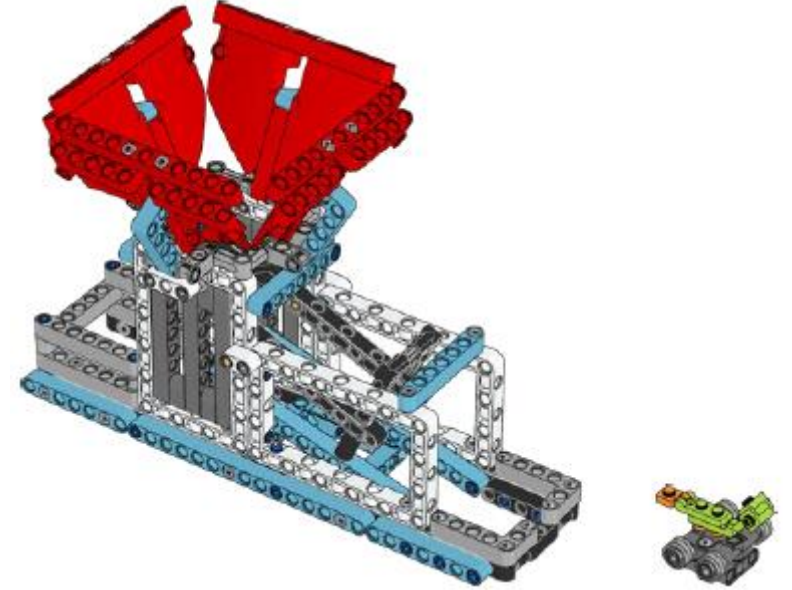
- If an energy unit is at least **partly** in the slot in the back of the toy factory (or in the red hopper) (max of three) (**5 pts Each**)
- If the mini dinosaur toy has been released (**10 pts**)

Restrictions:

Energy units stored in the toy factory may not be touching team equipment at the end of the match

+5: Energy Units in Factory
+10: Mini dinosaur released

Max: 25 pts



Mission 15: Rechargeable Battery

- If an energy unit is **completely** in the rechargeable battery target area (max of three) (5 pts each)

Restrictions:

The rechargeable battery is not an energy unit.

Energy units stored in the rechargeable battery target area may not be touching team equipment at the end of the match.

Note: The Rechargeable Battery does NOT have to be in the area to score these points



+5: Energy Unit in target area

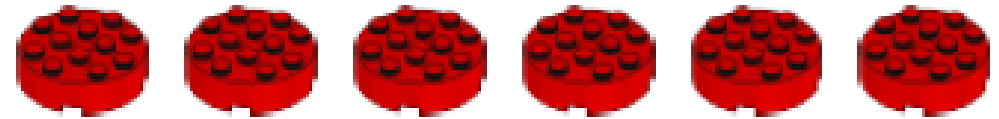
Max: 15 pts



Precision Tokens

Number of Precision Tokens left on the Field:

- 6 Tokens (**50 pts**)
- 5 Tokens (**50 pts**)
- 4 Tokens (**35 pts**)
- 3 Tokens (**25 pts**)
- 2 Tokens (**15 pts**)
- 1 Tokens (**10 pts**)



Max: 50 pts



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