Power Missions

The following missions are taken from the 2006 FLL Challenge, and have been adapted for use in Comp 2910. Note that while many of the challenges are the same, others are different or modified.

Note that there is lots of additional useful information on the FLL site. We encourage you to look there, but be careful that you are solving the 2910 missions as stated in this document, some of which require that the robot return to base!
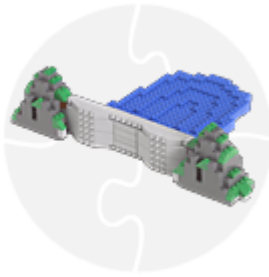
Missions

Roof Solar Panel:

Mission: Move the Roof Solar Panel ONTO the roof of the house by the sea for 15 points.

Personal Vehicle Choice:

Mission: Move the Hydrogen Car TO the white property or all-black driveway of the house by the sea and move the truck either TO the parking lot to be recycled, or TO the farm to be re-purposed. The car in its target is worth 25 points only if the truck is in one of its targets. The parking lot is the white area directly west of Base. The farm is the white area isolated between both rivers.

Hydro-Dam:

Mission: Place the Dam so it is TOUCHING both banks of any river section east of Base for 25 points. The Dam must be upright. When the match is over, the referee places (or projects) the Flood upstream of the Dam and there is a single maximum 10 point deduction if any houses are being TOUCHED by the Dam or Flood. The Dam is never considered a stray object.

Wind Turbines:

Mission: Place Wind Turbines so they are TOUCHING any white area not directly outside Base. The Wind Turbines must be upright. Scoring Wind Turbines are worth 15 points each.

The robot must return to base. Failure to return to base (ie: rescue) after placing the turbines, results in the ref removing the Turbines from the table. The mission cannot be re-attempted.

Grid Connection:

Mission: Place the Power Lines so they are TOUCHING the white of the Power Plant's property and the white of surrounding communities. The Power Lines must be upright. Communities connected to the Power Plant's property in this way are worth 5 points each. Each connected community that is in turn TOUCHING a scoring Hydro-Dam or scoring Wind Turbine is worth an added 5 points.
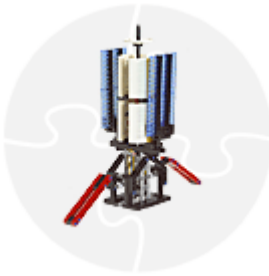
Solar Power Satellite:

Mission: Lower one of the Satellite's panels for 15 points. Lower a panel on the other (second) satellite for an additional 15 points.

If your robot is the first to lower one panel, 10 points are added.

If your robot is first to lower two panels, 25 points are added.

Wave Turbine:

Mission: Bring your own team-designed Wave Turbine (one per team) and move it TO the ocean directly west of the sandy beach. Your Wave Turbine model must consist of at least two pieces that move independently of each other. A scoring Wave Turbine is worth 25 points. A meaningful design is worth your time, but not worth points, and won't be judged.

Coal Mining:

Mission: Get the loaded Rail Car to roll down the Railroad tracks. Only if and when the loaded Rail Car TOUCHES the stoppers at the end, the team is allowed to:

a) retrieve the Rail Car and coal TO Base by hand for 10 points, OR

b) have the robot move the coal (and/or Rail Car) to base for 50 points

Ten (10) points will be deducted if any number of coal pieces are on the mat at the end of the competition.

Oil Drilling:

Mission: Move all the Oil Barrels (including the red version) OFF the Oil Platform for 10 points.

Barrels retrieved to base can be placed in reserve.

Corn Harvest and Processing:

Mission: Move all the Corn (including the red version) TO Base. The corn in its target is worth 25 points only if at least one Oil Barrel has been moved TO the Farm.

Uranium Mining:

Mission: Move all the Uranium (including the red version) OUT of the farm for 15 points.

Tree Planting:

Mission: Move Trees TO any area north of the main river. Trees must be upright. Pieces may be connected or attached to the Trees. Planted Trees are worth 10 points each. Trees moved to the Power Plant area could score as fuel, but do not score as planted.

Power Plant Supply:

Mission: Move fuel TO the Power Plant's property and return to base.

Trees: 10 points each (Maximum of two, because... For each Tree to score as fuel, another Tree must score as "Planted")

Black Coal: 10 points for at least half of the original load

Green Uranium: 10 points each

White Oil Barrels: 5 points each

Since energy is needed in order to find and process fuels, and since the processing and consumption of fuels often involves undesirable effects and by-products, the red versions of the fuel models represent inefficiency and negative impacts, which need to be minimized. There must be no red fuel models IN the Power Plant area for this mission to count. The separation (processing) of red fuel models from others may be done by the robot anywhere, or by hand IN Base.

If the robot fails to return to base after delivering fuel TO base, the fuel items will be removed from the field by the ref and not counted.

Oil Barrels:

Oil Barrels of either color are worth 25 points each IN [Base] as unused reserves, but... If you rescue the robot *from any table* at any time while there are Oil Barrels IN Base, the referee takes one away so it does not score. White will be taken before red. If there are no Oil Barrels IN Base at the time of the rescue, there is no loss.

There is a single maximum 40 point deduction if any Oil Barrel from anywhere is TOUCHING any water or property with a house.

Parking Lot:

The parking lot is designated as a storage area with respect to the Housekeeping rule, so the team is allowed to move objects to and from the parking lot by hand for storage only. The robot is allowed to enter and exit the parking lot, but it is not allowed to make contact with scoring objects nor strategic objects there.