

Vision

The task is an integral part of the development of a solar recharge station, which will allow airboats to dock and recharge autonomously.

Issues

- Ease of capture and reliable connection
- Waterproof/Environmental resistance
- Low cost/complexity

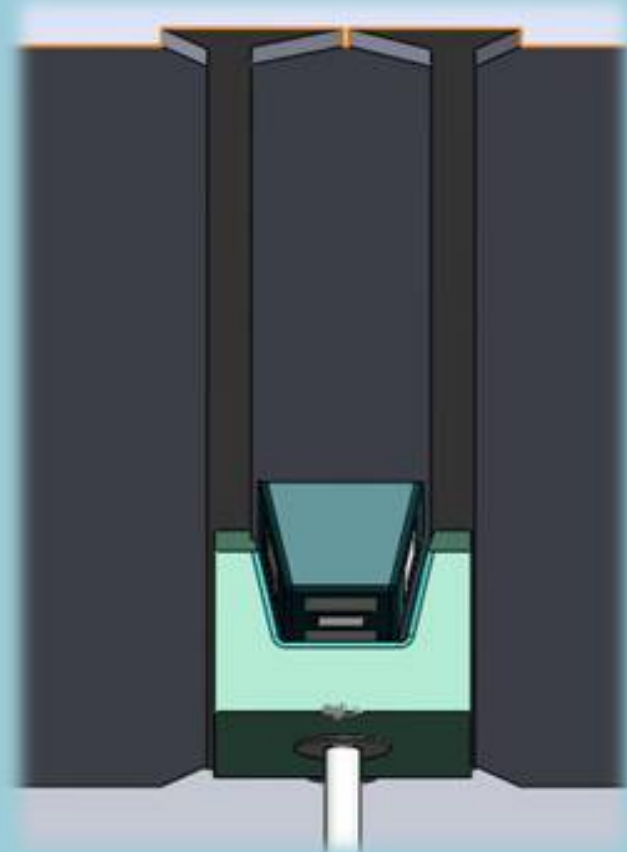
Solution

The design of connector was inspired by the structure of trolley-bus, imitating the trolley-bus that draws its electricity from overhead wires using spring-loaded trolley poles. The connector consists of two parts:

- on-board part including a flexible support and a contact shoe with three poles;
- off-board part shaping such as inverted trapezoid fixed on the top of the recharge station.

The recharge process will start when the two parts of connector completely contact.

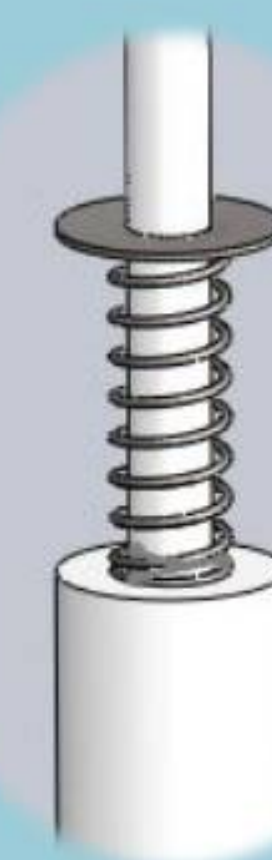
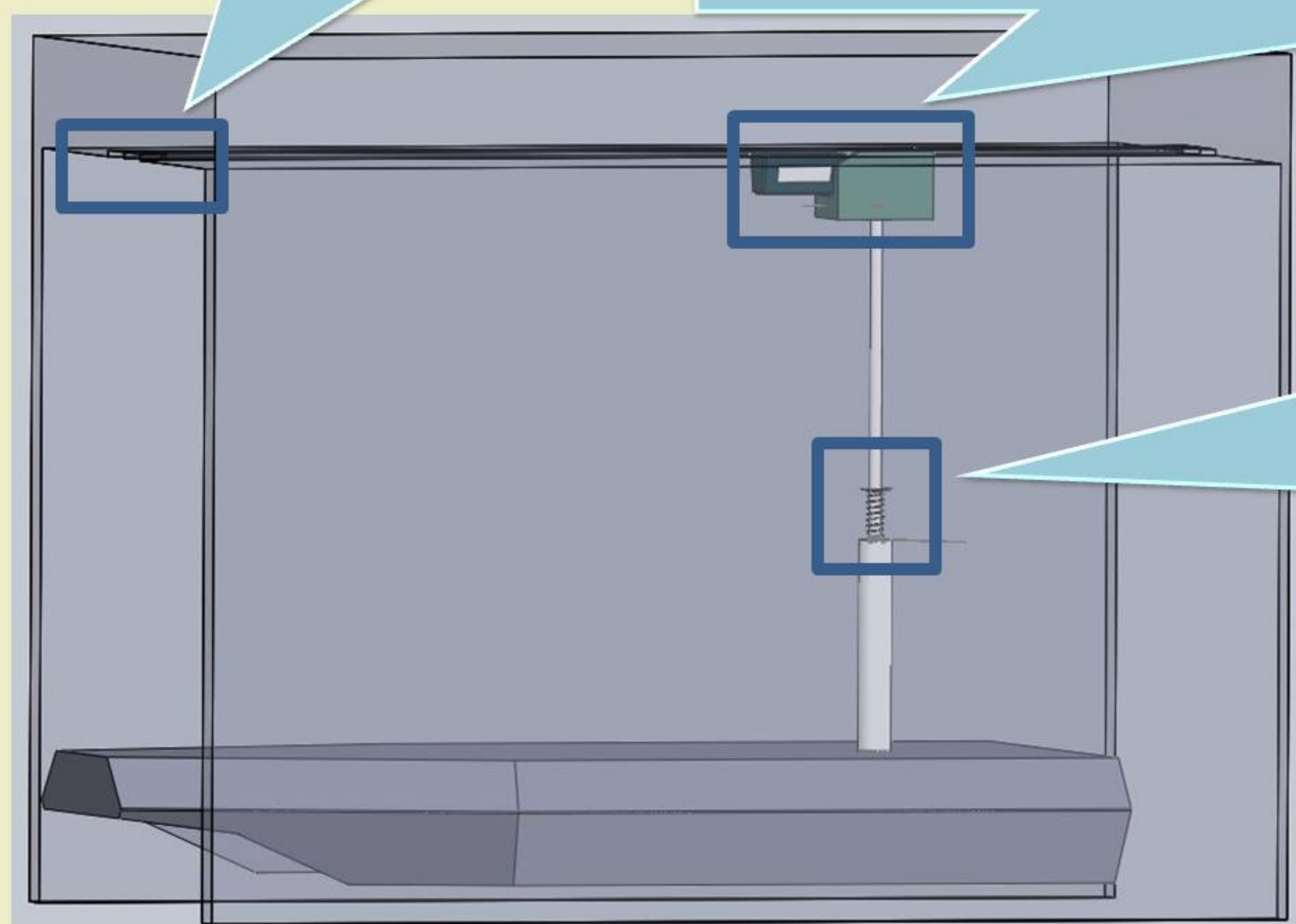
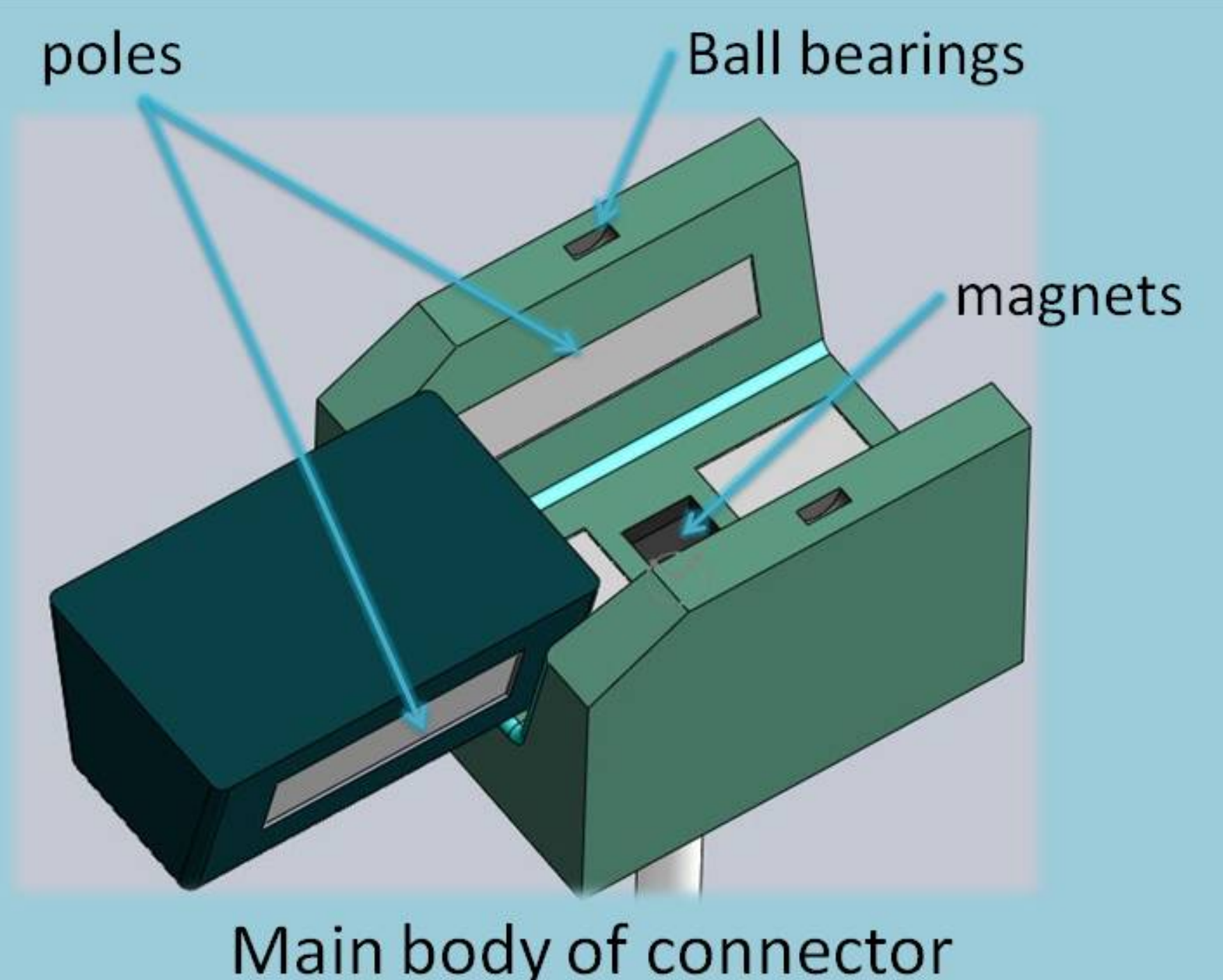
Tracks on the top of recharge station assist the blind-mate of two parts of connector.



Poles: three aluminum poles used for electric contact

Ball bearings: reduce the force of friction when connector sliding in the tracks

Magnets: assist to fix two parts of connector



Flexible support allows the rise and fall within limits of water wave.

Results

- Made a prototype by Styrofoam and ABS plastic.
 - Test is being done off board.
- The unique design of structure of connector insures the accuracy of contact and the stability in recharging.

Future Work

- Finishing the on board test.
- Processing the connector in mould mode.

Feedback

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