### Analysis of current situation

#### External systems

The analysis of the current situation contains a listing of the external systems involved with the design and a detailed explanation of the interactions between these systems. Inputs and outputs are determined to see the interactions with the simulation.

|  |  |
| --- | --- |
| Inputs in system | Unit |
| Motor input voltage | V |

|  |  |
| --- | --- |
| Outputs | Unit |
| Thrust | N |
| Rotational speed propeller | rpm |
| Prompts or warnings for successful or failed simulation | - |

|  |  |
| --- | --- |
| Properties of system | Unit |
| Friction coefficient | - |
| Ratio | # |
| Blade count | # |
| Diameter | m |
| Torque | Nm |
| Blade coefficient | - |
| Blade pitch | ° |
| Propeller coefficient | - |

#### Interactions

This are all the functions that have an interaction with an external system:

1. Loading in by computer
2. Interact with user
3. Output values to user

##### Interaction A

Computer needs the newest version of Excel installed.

##### Interaction B

* User can fill in variables stated in the “inputs” by using the computer.
* User can press buttons on keyboard.

##### Interaction C

* User can read values of computer screen.

#### Measurement plan

Thrust output and rotation speed of propeller need to be measured. Thrust is being measured with a hang scale and a boat velocity meter.