# Project 5 Groep 1 – Tool testing documentation

Testing the Schedule-Checker Tool can best be done by using a schedule that deliberately has all kinds of errors. A file with all those errors, ‘omloop planning met fouten’, should be downloadable in the same folder that contained this document.

It is recommended to first test the tool with just the schedule filled with errors, and then test the tool after adding a feasible schedule as well. An (almost) feasible schedule can also be found in this folder, ‘omloop planning’ (the only problem is that we calculated a higher usage per kilometre compared to the creator of the schedule).

The error filled excel file was based on the file ‘omloop planning’. Some values were deliberately changed to force errors, to be able to see whether the schedule-checker tool manages to find them all. Every error should occur at least once:

* Error 0 should occur for bus 14, who doesn’t finish in ‘ehvgar’
* Error 1 should occur for bus 1 (row 30), bus 2 (row 103) and bus 14 (row 525), whose final location (‘eindlocatie’) doesn’t match the next starting location (‘startlocatie’)
* Error 2 should occur for the bus services in row 2, 4 and 223 of the bus service excel file. These bus services aren’t covered by a bus.
* Error 3 should occur for the bus service in row 235 of the bus service excel file. It is covered by both bus 13 and bus 14.
* Error 4 should occur for row 525, which is when a bus is given less than the minimum amount of time needed to go from one location to the next.
* Error 5 should occur for rows 3, 5, 30 and 103, which is where a bus is given more than the maximum amount of time needed to go from one location to the next.
* Error 6 occurs a lot, since our calculations for battery usage differ from the calculations of the creator of the schedule we based our error file on. Whether it should have can be seen by comparing whether value of the column ‘state of charge’ of the rows where the errors occur is less than 31,5 kWh.
* Error 7 should occur for row 42, where the bus charges for less than 15 minutes.

In terms of KPI, the tool should have an output of 14 buses and 14 kWh that are delivered back to the network, since every bus starts with 1 kWh less than the maximum.

The tool was tested and all the expected errors occurred. The KPI’s also have the expected value, expect that the amount of kWh that will be delivered back should be 14 bus is 14,0002. This small deviation occurs due to rounding, and seems to be small enough to not cause any problems.