Test Document mini-FLUFFY

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1. Introduction:

The purpose of this document is to give an insight on how the entirety of the Mini-Fluffy system was tested. These tests can range from both physical test such as watching a pallet go an entire loop on the system to testing if the software holds up when strain is put on it. The way these tests are structured are based on predefined use cases that were used to help build the program. These use cases are what will also be used to define the tests. Additionally, next to these, there will be other tests that may not have to do with the use cases but are nonetheless still important to include.

2. Walkthrough:

The structure we want to follow is the following:

- Test cases are defined in detail (these include the pre- and post-conditions of the environment).
- The test will then take place after the system is ready.
- The test is then evaluated to see if the system has passed the test or not.

Test case ID: TC_#	**Test case:** {test name}
Description:	{Description of the test case to be done}
Conditions:	{Description of the preconditions before beginning the test case}
Expected test result:	{Description of what the expected passing result of the test is}
Test result:	{Passed/Failed}

3. Test cases:

Test case ID: TC_001	**Test case:** System Starts
Description:	When the operator presses the start button on the system, it will start the system.
Conditions:	System needs to be powered and “system_safe” needs to be true.
Expected test result:	System turns on, on button press.
Test result:	Passed

Test case ID: TC_002	**Test case:** System start with error
Description:	The operator attempts to start the system, but this fails due to “system_safe” being false. This can be from the emergency button pressed or the HMI start not true.
Conditions:	Systems needs to be powered.
Expected test result:	The system does not start the belt as it is not safe yet. The system remains off.
Test result:	passed

Test case ID: TC_#003	**Test case:** The pallet enters the station and is lifted.
Description:	A pallet on the conveyor arrives to a station where the pallet is being detained and lifted for predefined amount of time, where after that the pallet is being dropped and let through when next station is free.
Conditions:	The system is runni2ng, and the upcoming station is free along with the current station.
Expected test result:	The pallet is lifted, waits, then it waits, then it gets lowered, then released when the next station is free.
Test result:	Failed.

Test case ID: TC_004	**Test case:** pallet transferred
Description:	The Pallet loads onto
Conditions:	A pallet on the conveyor arrives to a transfer unit where the pallet is being lifted, transferred across to the conveyor on the other side and lifted down. Then let through when next station is free.
Expected test result:	System is running with pallet reaching the transfer station.
Test result:	passed

Test case ID: TC_005	**Test case:** Pallet not released on station.
Description:	A pallet on the conveyor arrives to a station where the pallet is being detained and hold until the next station is free. The pallet is not being lifted.
Conditions:	System is running and pallet is at the station.
Expected test result:	Pallet is not released as the next station is not free.
Test result:	Passed

Test case ID: TC_006	**Test case:** transferred pallet
Description:	A pallet on the conveyor arrives to a transfer unit where the pallet is being lifted, transferred across where the pallet waits for a predefined amount of time, then moves to the end and lifted down, then let through when next station is free.
Conditions:	The system is running, and the pallet is at the end of the transfer unit.
Expected test result:	The pallet is not released as the next station is not free.
Test result:	Passed

Test case ID: TC_007	**Test case:** Emergency button pressed

Description:	The emergency button is pressed as the system is running, this stops the system completely and puts it in the error state.
Conditions:	System is running normally
Expected test result:	All processes are stopped
Test result:	Passed

Test case ID: TC_008	**Test case:** Magnetic sensor shows pallet on the HMI
Description:	In the HMI dashboard the status of the magnetic sensors is shown.
Conditions:	System is running normally with a pallet on board reaching a magnetic sensor.
Expected test result:	The sensor gets triggered, and this information is show in the HMI.
Test result:	Passed

Test case ID: TC_009	**Test case**: transfer unit function on HMI
Description:	The HMI has functionality to show if the transfer unit is running or not.
Conditions:	System is running with a pallet loaded on to the transfer unit ready to be transferred.
Expected test result:	The transfer unit passes the pallet, and the HMI shows that the transfer unit is active.
Test result:	Passed

Test case ID: TC_010	**Test case:** system starts with the HMI
Description:	In the dashboard the system can be turned on by click on the start button.
Conditions:	The system is powered, and currently “system_safe” is true. Additionally, the physical start button needs to be pressed.
Expected test result:	The system will power on and start functioning.
Test result:	Passed.

Test case ID: TC_011	**Test case:** Pallet is removed from the system
Description:	A pallet has been removed from the system. This is registered to the counter and states are reset
Conditions:	System is currently running with a pallet loaded on to the belt.
Expected test result:	Orange light is turned on. Error shown in HMI when the next station has not received this pallet.
Test result:	Failed.