Universidade do Minho

Escola de Engenharia

Departamento de Engenharia Aeroespacial

Definition of the Mission

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Group nº 3 – UC Projeto Aeroespacial

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1 Introduction

The recovery of an RC aircraft, the "Hangar 9 Solo" model and its engine, "Thunder Tiger 46 PRO", is the challenge that our group embraces with enthusiasm and determination. Comprised of four members, each bringing distinct expertise, our team is committed to restoring this aircraft to its full functionality. The main objective of this project is to recover the engine and get it operational again, as well as demonstrate the flight operation and the engine capabilities at the end of the process.

2 Group Definition

Our group consists of four highly skilled and motivated individuals. Two members have a background in Aerospace Engineering Sciences, bringing a deep understanding of flight principles and aerodynamics. One member has a background in Mechanical Engineering, contributing their experience in mechanical systems and structures. The last member has a background in Computer Engineering, bringing skills in electronic systems and automation.

3 Main Mission Definition

As part of the Hangar 9 Solo restoration project, our team takes on the mission of bringing the aircraft's engine back to life. Our focus lies in inspecting, diagnosing, and repairing the engine to its full operational capacity. This involves in-depth analysis of its current state, identifying any worn-out components, and sourcing or creating replacements to ensure optimal performance and safety.

Our main mission is to restore the RC plane "Hangar 9 Solo" to its original operational condition. This challenge not only requires the repair and replacement of damaged components but also demands a meticulous process of analysis, assembly, and testing. Additionally, we aim to demonstrate the successful flight operation of the aircraft at the end of the project, highlighting our commitment to excellence and precision at every stage of the recovery process.

4 Framework and Determination

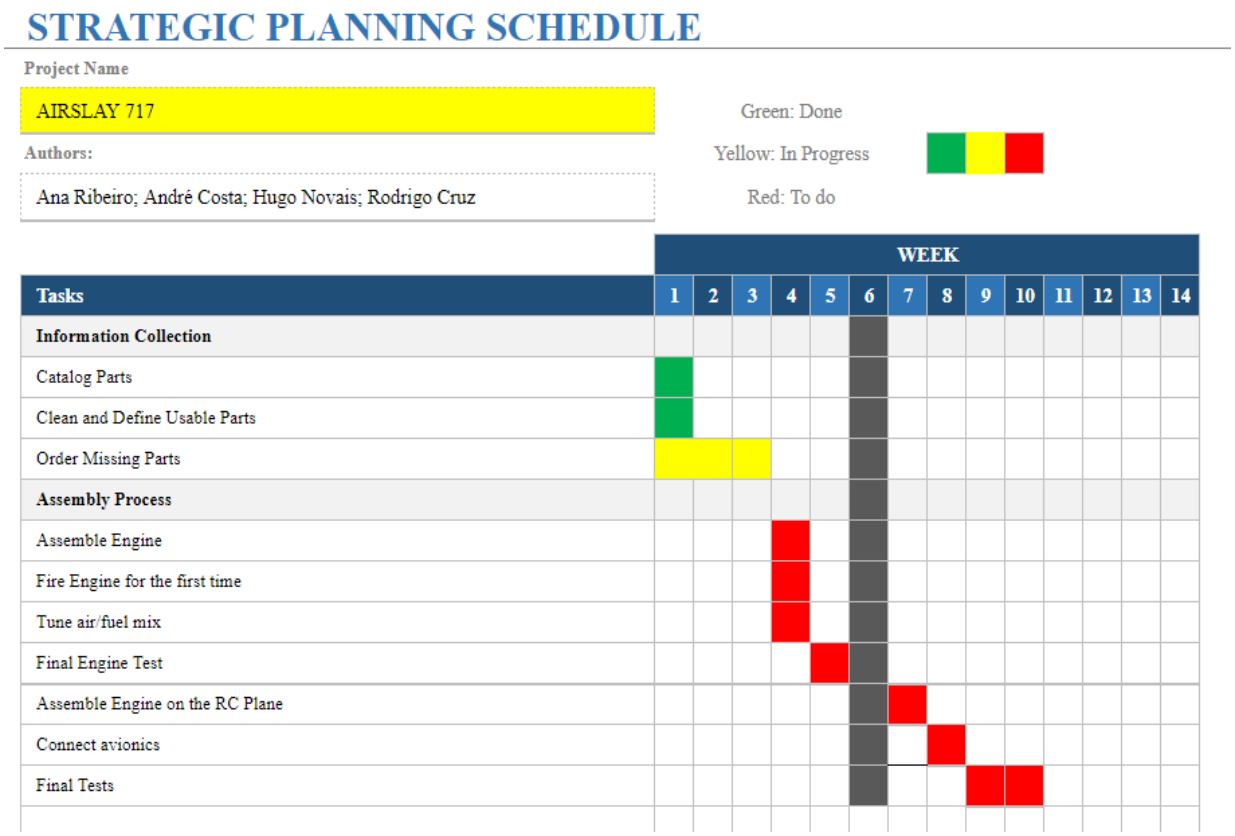
The recovery of RC aircraft is not just a technical exercise but also a shared passion for our team. Beyond the technical challenge involved, there is an intrinsic motivation to preserve and restore the beauty and functionality of an iconic aircraft like the "Hangar 9 Solo". Furthermore, the potential to learn and enhance our technical and teamwork skills drives our commitment to this project.

5 Goals

The objectives of our project are clear and defined: to recover the RC aircraft "Hangar 9 Solo" and restore it to its full operational functionality. This involves a detailed analysis of the aircraft's engine, identifying the parts that need renewal, conducting meticulous assembly and testing of the engine. Additionally, our ultimate goal is to integrate the engine with the avionics parts and the aircraft structure, leading to a comprehensive final test culminating in the successful demonstration of the aircraft's flight operation.

6 Timeline

To finalize, we created a combined timeline that takes into account both the avionics and the structural timelines. The final timeline is presented below.



STRATEGIC PLANNING SCHEDULE

Project Name

AIRSLAY 717

Authors:

Ana Ribeiro; André Costa; Hugo Novais; Rodrigo Cruz

Green: Done

Yellow: In Progress

Red: To do

	WEEK													
Tasks	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Information Collection														
Catalog Parts														
Clean and Define Usable Parts														
Order Missing Parts														
Assembly Process														
Assemble Engine														
Fire Engine for the first time														
Tune air/fuel mix														
Final Engine Test														
Assemble Engine on the RC Plane														
Connect avionics														
Final Tests														

Figure 1 - Tasks and Timelines

7 Progress made

Up to this point the group has catalogued all the parts of the engine as well as assigning the official part number according to the manufacturer.

Following is the list and exploded view of all the engine and carburetor parts:

Number	Description	Ref.	Quantity	Estado
1	PROP NUT	NA001	1	USABLE
2	PROP WASHER	HW008	1	USABLE
3	PROP DRIVE	DG4612	1	USABLE
4	TAPER DRIVE WASHER	DC4611	1	USABLE
5	BALL BEARING S	B006	1	REPLACE
6	CARB RETAINING BOLT	SP2110	1	USABLE
7	CRANKCASE	CK4607	1	USABLE
8	BALL BEARING L	B007A	1	REPLACE
9	CRANKSHAFT	CS4608	1	USABLE
10	GASKET SET	L001	1	MISSING
11	BACKPLATE	RB4609	1	USABLE
12	SCREWS S	S017	4	USABLE
13	CONNECTING ROD	CR4606	1	REPLACE
14	PISTON/CYLINDER	CP4604/5	1	REPLACE
15	PIN ASSEMBLY	P006	1	REPLACE
16	GASKET SET 2	HW4603	1	USABLE
17	CYLINDER HEAD	CH4601	1	USABLE
18	SCREWS L	S001T	6	USABLE
19	GASKET SET 3	HW004	1	USABLE
20	SCREWS L 2	S018	2	USABLE
21	GASKET SET 4	HW010	2	USABLE
22	SILENCER	MF003A	1	USABLE
23	MAIN NEEDLE VALVE	MN4626	1	USABLE
24	GASKET SET 5	HW007	1	USABLE
25	POPPET VALVE	MNP002	1	USABLE
26	GASKET SET 6	HW010	1	USABLE
27	FUEL NIPPLE	OS2124A	1	USABLE
28	CARBURATOR	CM4613-1	1	USABLE

Table 1 - Parts List

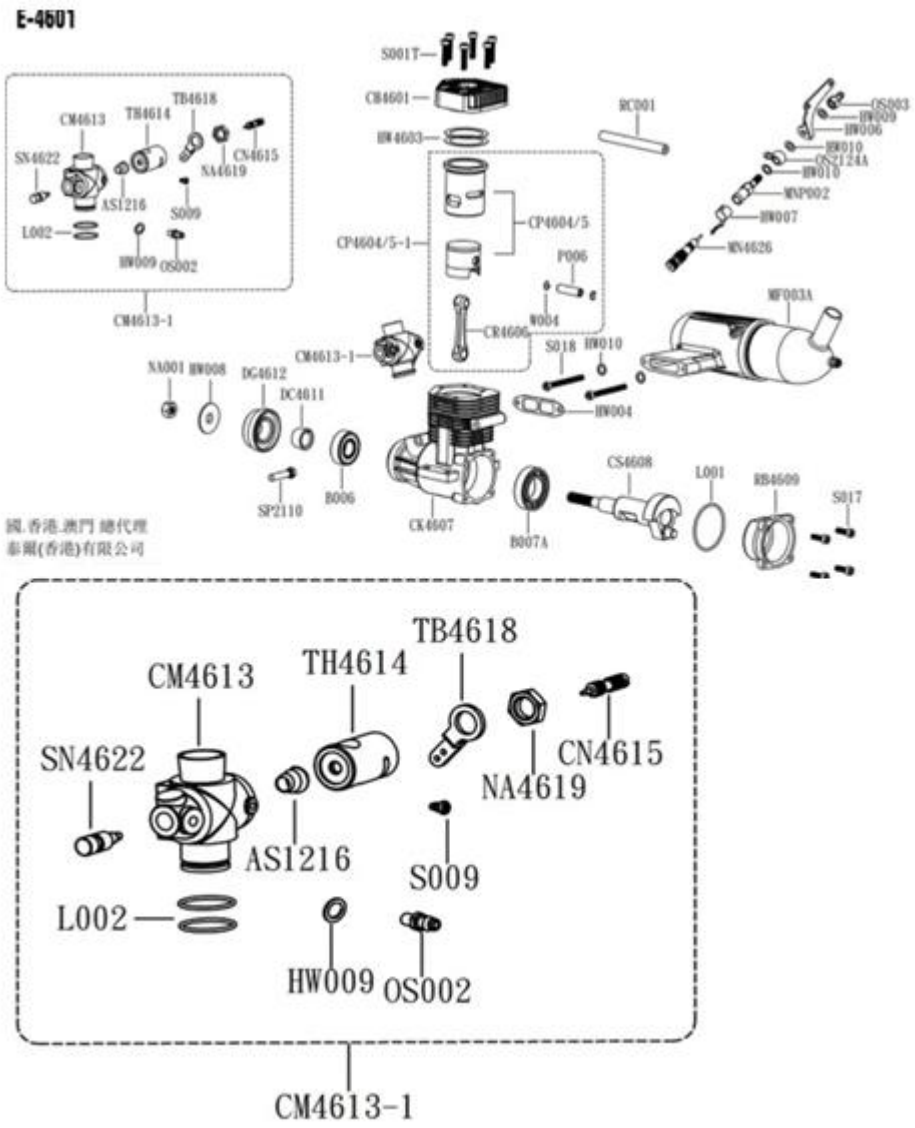


Figure 2 - Exploded View