

APPENDIX I

Preliminary Financial Analysis

Market Prices

A preliminary research has showed that most companies in the UAV industry do not disclose a price list for their products. If a customer is interested in acquiring a UAV he must ask for a quote explaining the characteristics he wants his product to have or the activity he wants to use it for.

We have asked for such quotes in the past from small companies and they have provided us with a large range of prices. The lowest price we have received was \$30.000 and regarded a UAV suitable for simple surveillance purposes. The highest price has been \$100.000 for a UAV designated for use in surveillance activities but with high capabilities. Further research has showed that LUAVs can reach prices up to \$150.000 for surveillance activities. The market price research did not account for low level UAVs (i.e. toys or drones used by amateurs).

Given that the current UAV Challenge scope requires aircraft capabilities equivalent to but not the same as surveillance drones it can be safely assumed that the pricing of the specific cargo drone can be placed within the range of \$30.000 to \$150.000 per unit for single unit purchases, depending on specific operating requirements and scope of usage.

Bill of Materials

The BOM helps establish the exact costs related to the development of the drone (platform) and the subsequent direct manufacturing costs incurred before a production line has been set-up.

The suppliers for each component were selected according to a number of factors with geographic location (HQ in EU or USA) and market reputation being the most significant. All components are indicative and were selected based on the cargo challenge specifications giving preference on increased capabilities and low weight.

Bill of Materials - HME-1X						
A/A	Part Name	Part Description (Indicative)	Vendor (Indicative)	Quantity	Unit Price (€)	Total Cost (€)
					Estimated	Estimated
1	(EO/IR) Sensors	Orion	Next Vision	1	€ 43.200	€ 43.200
2	Communications Module	TELEM06	UAV Navigation	2	€ 4.950	€ 9.900
3	Communications Module	TELEM06	UAV Navigation	1	€ 10.800	€ 10.800
4	FCS Software	Skyview	UAS-Europe	1	€ 3.900	€ 3.900
5	Ground Control Station	GCS03	UAV Navigation	1	€ 16.500	€ 16.500
6	Tricycle Retractable Wheels	-	-	1	€ 4.500	€ 4.500
7	Batteries	TP9000	-	4	€ 235	€ 940
8	Servo actuators	S3102	-	3	€ 100	€ 300
9	RC Receiver	R617FS	Futaba	1	€ 250	€ 250
10	Motor Propulsion	A40-10L V2	Hacker	2	€ 99	€ 198
11	Motor VTOL	A30-12XL	Hacker	4	€ 139	€ 556
12	Launch & Recovery	Catapult & Parachute	-	1	€ 9.522	€ 9.522
13	Speed Controller	ESC	JETI/ROTORSTAR	1	€ 150	€ 150
14	Drone Body (Fuselage, Tail, Winds etc.)	-	-	1	€ 35.000	€ 35.000
Total Platform Cost						€ 135.716

Table 1: BOM – HME-1X.

Bill of Materials - HME-2X						
A/A	Part Name	Part Description (Indicative)	Vendor (Indicative)	Quantity	Unit Price (€)	Total Cost (€)
					Estimated	Estimated
1	(EO/IR) Sensors	Orion	Next Vision	1	€ 43.200	€ 43.200
2	Communications Module	TELEM06	UAV Navigation	2	€ 4.950	€ 9.900
3	Communications Module	TELEM06	UAV Navigation	1	€ 10.800	€ 10.800
4	FCS Software	Skyview	UAS-Europe	1	€ 3.900	€ 3.900
5	Ground Control Station	GCS03	UAV Navigation	1	€ 16.500	€ 16.500
6	Tricycle Retractable Wheels	-	-	1	€ 4.500	€ 4.500
7	Batteries	TP9000	-	6	€ 392	€ 2.352
8	Servo actuators	S3102	-	3	€ 100	€ 300
9	RC Receiver	R617FS	Futaba	1	€ 250	€ 250
10	Motor Propulsion	A40-10L V2	Hacker	6	€ 99	€ 594
11	Motor VTOL	A30-12XL	Hacker	2	€ 139	€ 278
12	Launch & Recovery	Catapult & Parachute	-	1	€ 9.522	€ 9.522
13	Speed Controller	ESC	JETI/ROTORSTAR	1	€ 150	€ 150
14	Drone Body (Fuselage, Tail, Winds etc.)	-	-	1	€ 50.000	€ 50.000
Total Platform Cost						€ 152.246

Table 2: BOM – HME-2X.

It is evident that the HME-2X model has an increased BOM cost of approximately €19.500 for the development phase mainly due to the difference in the model's size. This cost is

expected to be significantly lower once a production line has been established and the learning curve has been completed.

Development Expenses

The development expenses are expenses that will be incurred only once and therefore are part of the initial capital expenses along with the cost of establishing the production line. There is a high development cost mainly due to the increased cost of purchasing the necessary components in single units and the requirement to carry out destructive testing and multiple platform testing (laboratory, controlled environment, field and harsh conditions testing).

Development Expenses			
A/A	Expense Type	HME-1X (cost in €)	HME-2X (cost in €)
1	Total Platform Cost	€ (135.716,00)	€ (152.246,00)
2	Secondary Drone Body for Destructive Testing	€ (45.000,00)	€ (45.000,00)
3	Quality Control Cost of Platform Components (if outsourced)	€ (15.000,00)	€ (15.000,00)
4	Controlled Environment Testing - Lab (equipment not included)	€ (2.000,00)	€ (2.000,00)
5	Controlled Environment Testing - Real Life Conditions (Simulation)	€ (3.000,00)	€ (3.000,00)
6	Controlled Environment Testing (Field)	€ (3.000,00)	€ (3.000,00)
7	Full Testing (Normal Conditions)	€ (5.000,00)	€ (5.000,00)
8	Full Testing (Harsh Conditions)	€ (5.000,00)	€ (5.000,00)
9	Estimated Patenting Cost in EU, USA (Design)	€ (60.000,00)	€ (60.000,00)
10	Minimum Personnel Expenses (est. 5 engineers & 3 technicians)	€ (120.000,00)	€ (120.000,00)
Total Development Expenses		€ (393.716,00)	€ (410.246,00)

Table 3: Development Expenses – HME-1X vs HME-2X.

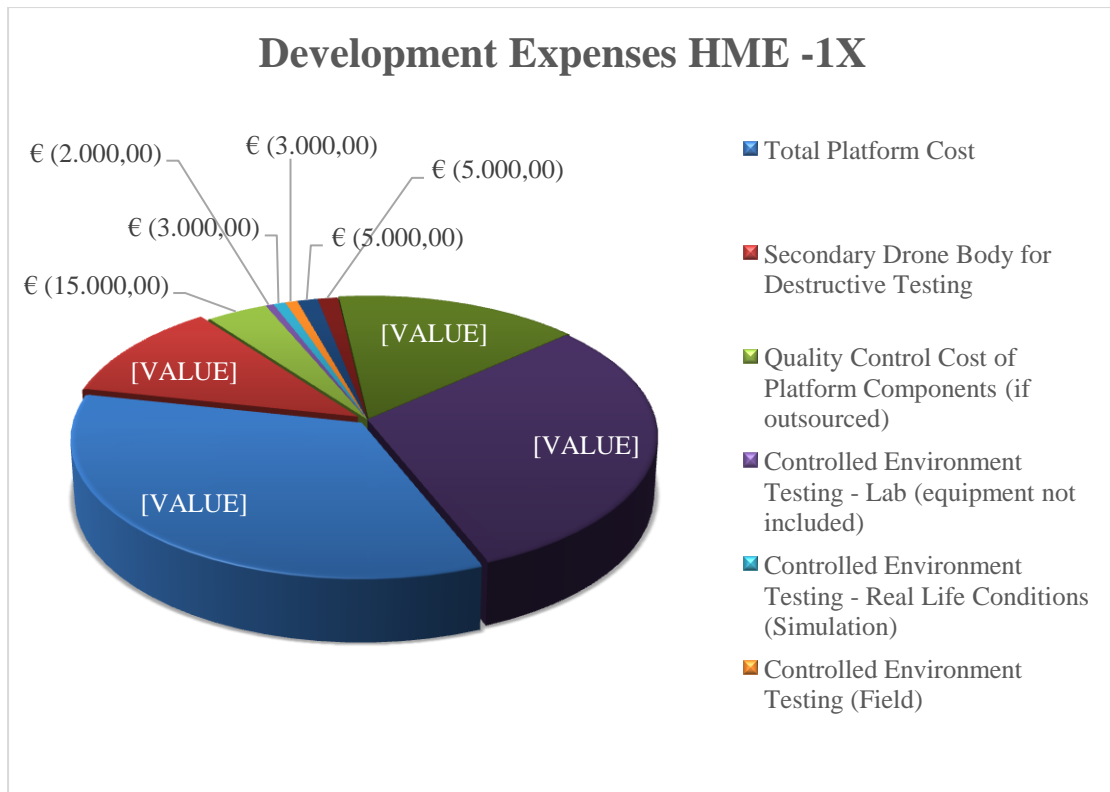


Figure 1: Development Expenses Breakdown for HME-1X.

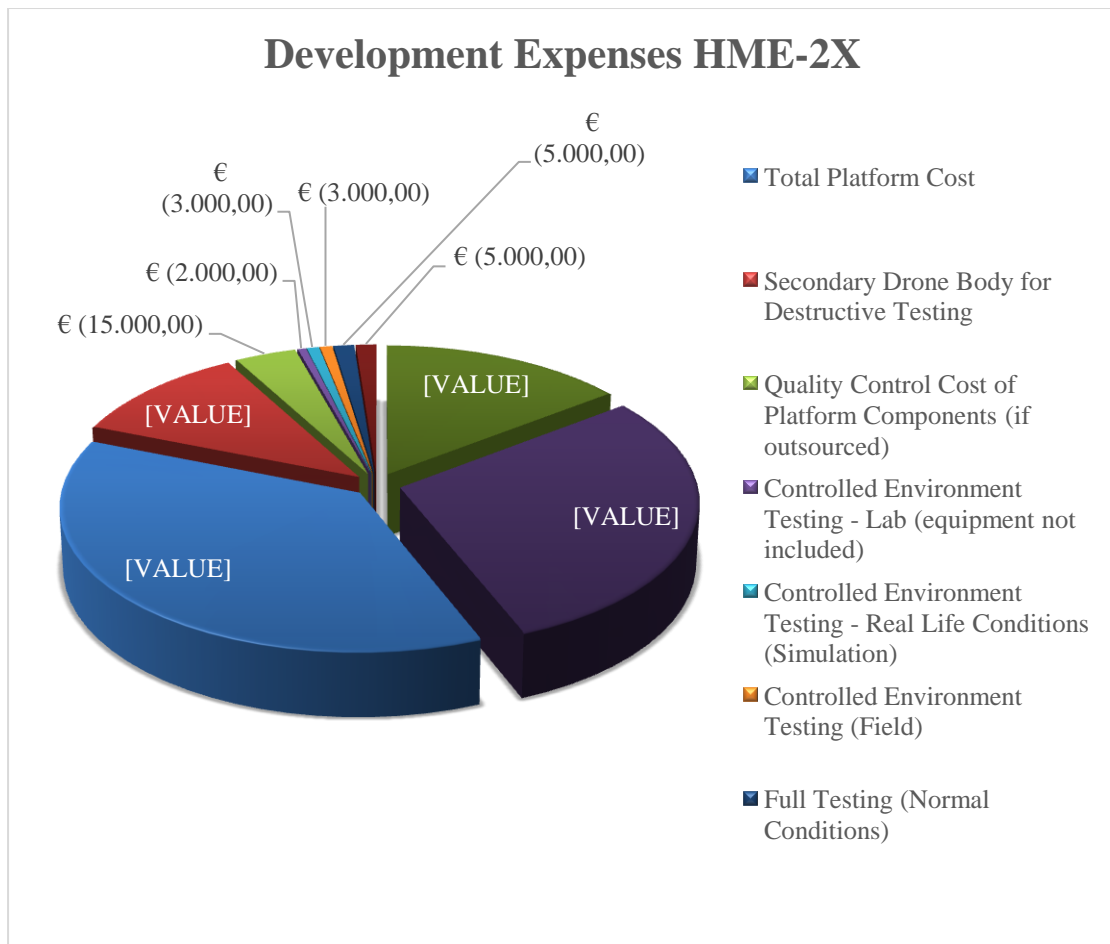


Figure 2: Development Expenses Breakdown for HME-2X.

Given the small differences between the two platforms the only reason for the cost variation is the platform production cost as already described in the BOM section.

Cost of Goods Sold

The following table shows the per unit variable costs for the “HME-1X” and the “HME-2X” products without including any shipping fees. The cost structure assumes that the products will be developed, produced and sold from an existing company.

Cost of Goods Sold	HME-1X	HME-2X
Total Platform Cost	€ (97.144,00)	€ (101.497,33)
Quality Control of Components	€ (6.000,00)	€ (6.000,00)
Testing (complete)	€ (13.000,00)	€ (13.000,00)
Product Liability Insurance	€ (5.000,00)	€ (5.000,00)
Loan Interest Rate @ 15% (if debt is used)	€ (17.271,60)	€ (19.824,60)
Total COGS per Unit	€ (132.415,60)	€ (137.421,93)

Table 4: COGS per Unit.

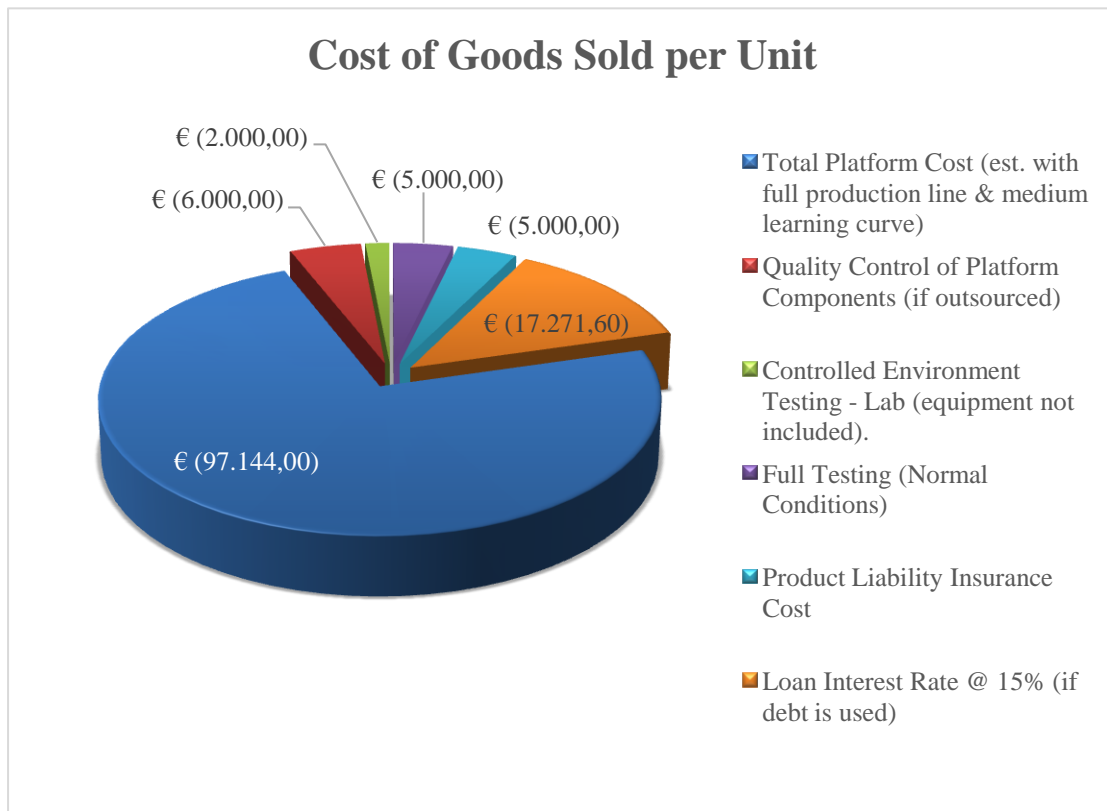


Figure 3: COGS for HME-1X.

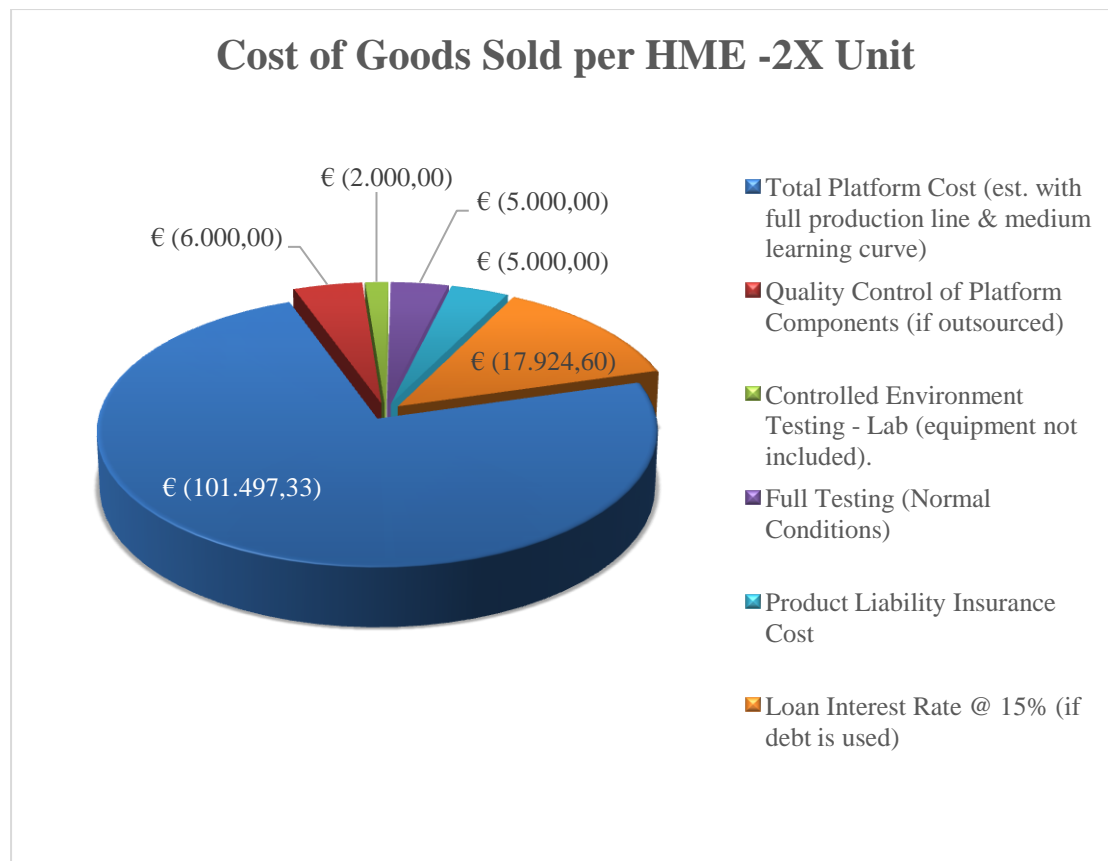


Figure 4: COGS for HME-2X.

As expected the cost of the HME-2X remains larger but after accounting for the establishment of a production line the difference is now approximately €15.600. It should be noted here that all costs are calculated for an annual production capacity of 8 units and that the company will use the Make-to-Order methodology (meaning that raw materials will be procured after an order has been placed).

Direct Operating Expenses

The direct operating expenses are expenses required for the production of the drone platforms but are irrelevant of the unit numbers produced. The only limiting factor is the annual maximum capacity which has been estimated at 8 units. Any increase in the capacity that leads up to 38 units per annum is expected to affect the overall operating expenses only to the extent of the increase in personnel compensation. Significant increases in operating expenses will be incurred if the facilities and the production line need to be expanded, which in such case will require a feasibility study and an additional investment valuation.

As presented below the two platform versions will require the same amount of operating expenses; therefore this expense does not affect any decisions regarding a preferred platform selection.

Direct Operating Expenses - HME-1X or 2X		
A/A	Expense Type	Value in Euros (€)
1	Recurring Patenting Cost (est. in EU, USA for Design)	€ (6.000,00)
2	Production Line Maintenance (est.)	€ (30.000,00)
3	Marketing Cost (1st year promotion est.)	€ (35.000,00)
4	Marketing & Logistics (support personnel - 3)	€ (36.000,00)
5	Management Rewards (1 level)	€ (36.000,00)
6	Minimum Personnel Expenses (est. 3 engineers & 5 technicians for 8 units annual capacity)	€ (94.000,00)
7	Personnel Life Insurance Expenses	€ (3.320,00)
8	Employer Liability Insurance Expenses	€ (4.800,00)
9	Security Expenses (est.)	€ (18.000,00)
10	Administrative Expenses (est.)	€ (20.000,00)
Total Development Expenses		€ (283.120,00)

Table 5: Direct Operating Expenses (annual).

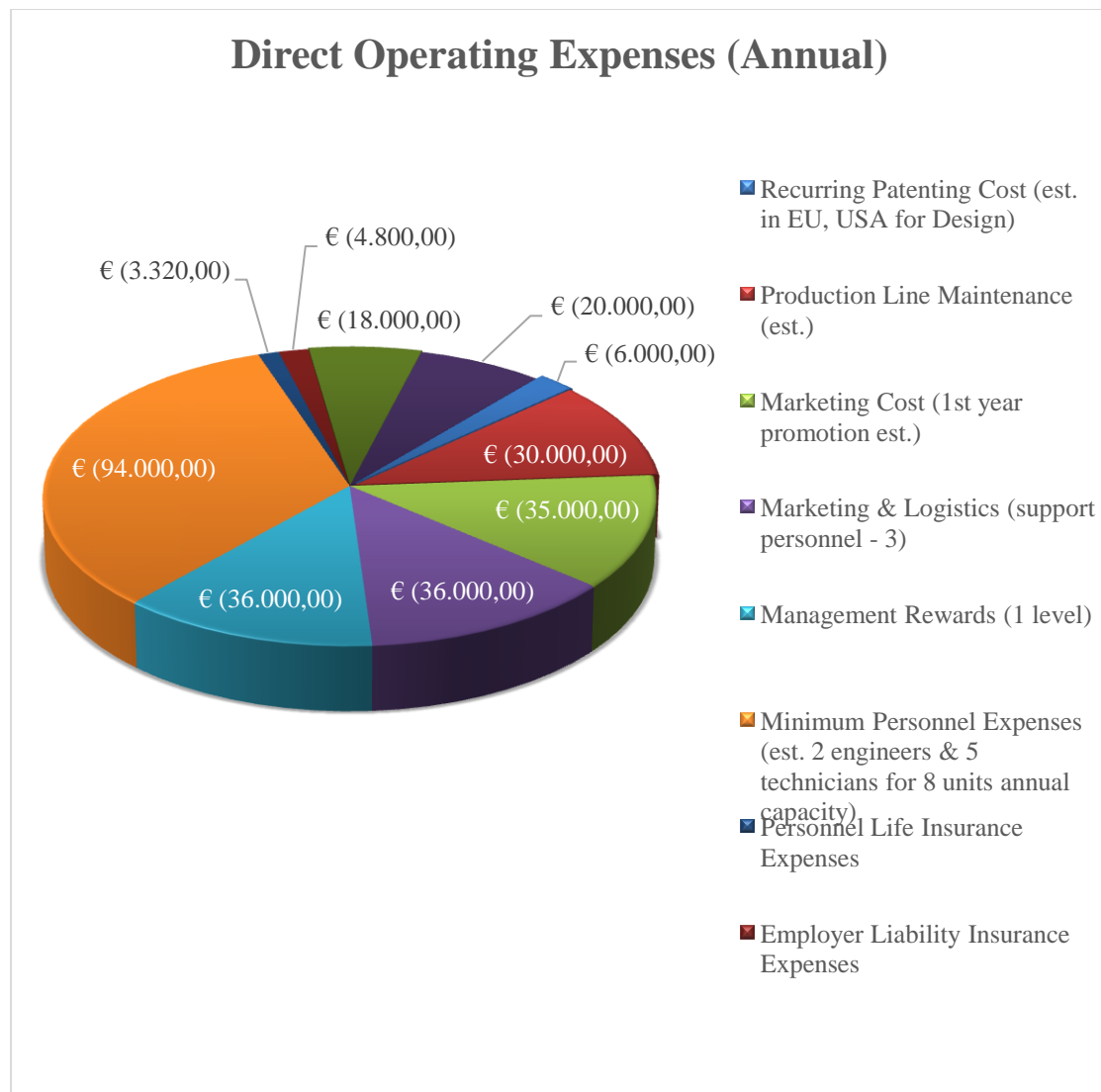


Figure 5: Direct Operating Expenses for HME 1X & 2X.

Overall Expense Comparison

There are four main categories of expenses recognized related to the development and production of the platform. The production line setup cost includes the purchase of the necessary equipment to build, inspect and test the produced drones in-house and should support an annual capacity of up to 38 units. It is important to note that the financial analysis was produced with specific assumptions i.e. the drone will be produced by an established company, the component costs were derived straight from the original vendors and the remaining expenses were calculated based on the prices and salaries in Greece during 2016. Moreover it was assumed that the company will not require separate licenses to operate its production line nor will it be necessary to acquire any certifications or type approvals for the platforms (as of May 2016 no certification requirements have been

produced by EASA or FAA). Finally it must be noted that no delivery costs have been accounted for and the funding is based on a 15% interest debt structure.

Total Expenses HME-1X vs HME-2X			
A/A	Type of Expense	HME-1X in (€)	HME-2X in (€)
1	Development Costs	€ (393.716,00)	€ (410.246,00)
2	COGS/Unit	€ (133.739,76)	€ (148.862,49)
3	Direct Operating Costs (Annual)	€ (283.120,00)	€ (283.120,00)
4	Production Line Setup Cost	€ (300.000,00)	€ (300.000,00)
Total Development Expenses		€ (1.894.575,76)	€ (1.929.228,49)

Table 6: Total Cost Comparison.

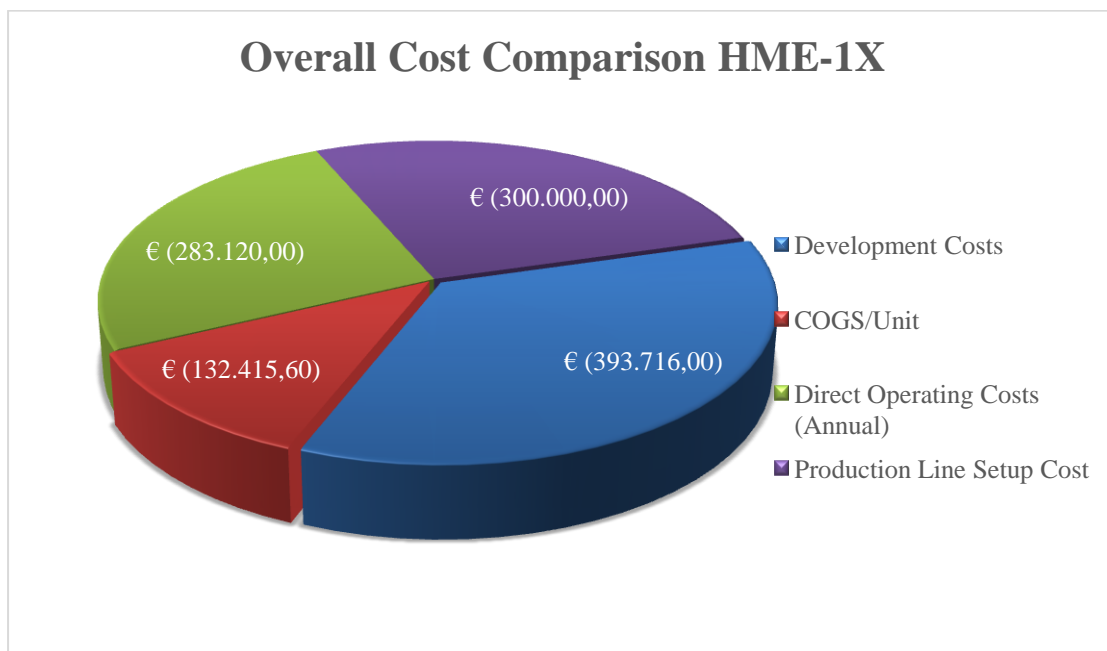


Figure 6: Overall Cost Comparison for HME-1X.

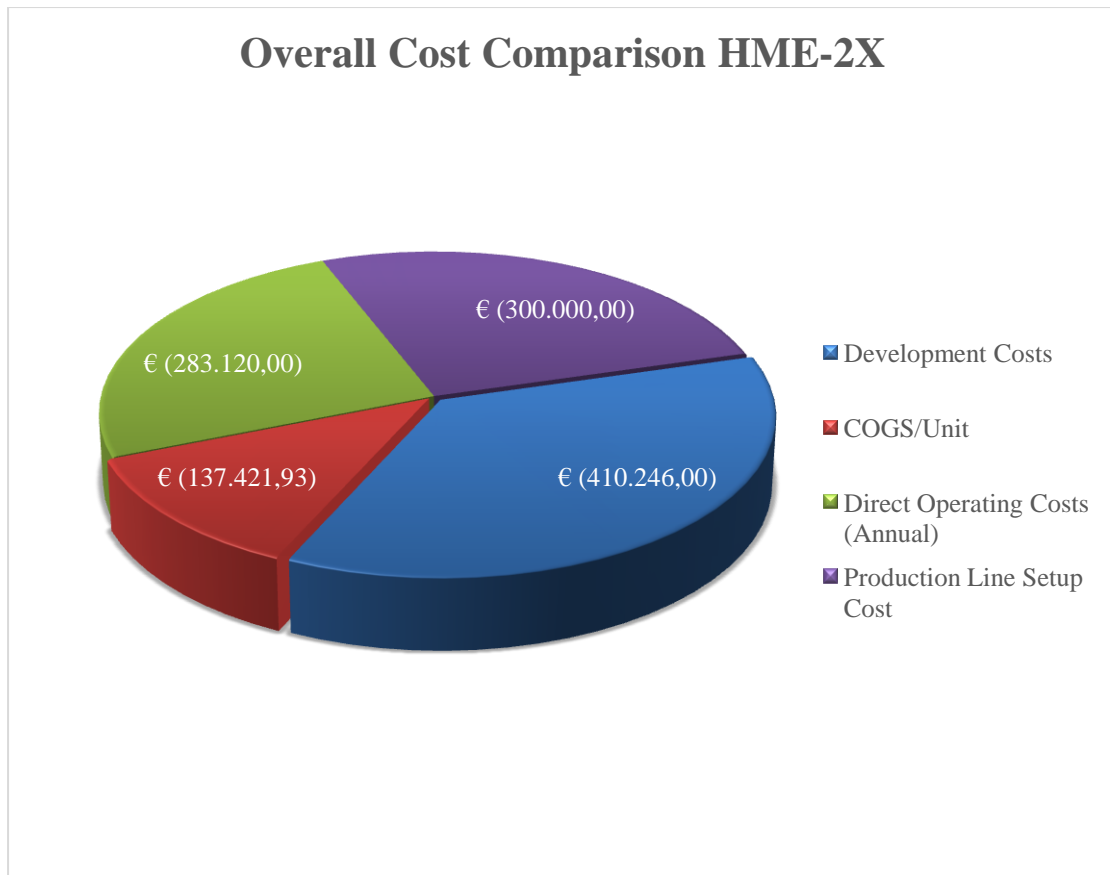


Figure 7: Overall Cost Comparison for HME-2X.

There is a total difference of €34.650 between the two platforms under study but this difference is not affected by the operating costs or the initial capital investment required. This means that the margin of error is very low and therefore we can accept the difference as accurate enough for the preliminary financial analysis. In order to evaluate the two platforms in financial terms a break-even analysis is performed in the following section of the report.