



UNIVERSITAT POLITÈCNICA DE CATALUNYA  
BARCELONATECH

Escola Tècnica Superior d'Enginyeries  
Industrial i Aeronàutica de Terrassa



SEAT

# Autonomous Data Acquisition System for Testing Vehicles

*A degree's Final Project Submitted to the Faculty of the*

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## **BUDGET**

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## Budget

### I. SINGLE ADAQ PROJECT

The budget only takes into account the material and tools the company acquired or designed in order to implement ADAQ system. The tools and programs already available to the company such as the vehicle, two computers or licenses from LabVIEW and LMS Tecware softwares are not contemplated. The number of acquisition modules depend on the amount of transducers used, so the different points from the vehicle it is desired to study. This is the budget for a standard ADAQ project.

**Table 1** Cost of one ADAQ project.

ITEM	TYPE	QUANTITY	TOTAL COST (€)
<b>CX22-W</b>	Computer	1	3487,5
<b>MX840</b>	Computer	2	10105,2
<b>MX1615</b>	Computer	1	6025
<b>Control Device</b>	Electronics	1	800
<b>Driver Control Box</b>	Electronics	1	200
<b>Navilock NL-302U</b>	GPS Antenna	1	106
<b>Accesories</b>	Electronics	1	1000
<b>DIRECT COST</b>	-	-	<b>21723,7</b>
<b>Configurations</b>	Technician	1	400
<b>Intrument 20-30 transd.</b>	Technician	1	4000
<b>Set-up Test</b>	Technician	1	800
<b>INDIRECT COST</b>	-	-	<b>5200</b>
<b>TOTAL</b>	-	-	<b>26923,7</b>

The cost from the Control Device and the Driver Control Box is defined from the amount of working hours inverted by company's technicians to manufacture it. On the same way indirect cost have been calculated. The internal company's working hours cost is of 50€/h.

In the accessories are the cables and adapters in order to fix the acquisition modules and every electronic component in the vehicle.

ADAQ is meant to be sold to internal company's departments. The department that request the use from ADAQ system might have their own transducers to instrument. The total cost from standard ADAQ is of 26.923,7 €. Transducers are not taken into account on the final cost.

A guide cost for the used transducers is presented.

**Table 2** Extra information about cost of instrumented transducers used.

TRANSDUCER	TYPE	QUANTITY	TOTAL COST (€)
<b>Termocouple</b>	Transducer	4	88
<b>SG gauge</b>	Transducer	8	240
<b>Accelerometer</b>	Transducer	5	3110
<b>Displacement Sensor</b>	Transducer	2	1332
<b>TRANSDUCERS</b>	-	-	4770

## II. MULTIPLE ADAQ PROJECTS

Before setting a multiple projects case few considerations are stated.

It is understood a project involves only one vehicle and at the same time one vehicle can only house one project. It is also assumed the different vehicles are acquiring on the same testing track, so there is a single intermediate computer on the testing track and a single analysis computer able to house the different projects.

According to QuantumX HBM acquisition computers provider, the discount associated to the purchase from the set, 1 project= one CX22-W + two MX840 + one MX1615, is the following:

**Table 3** Cost per ADAQ project and vehicle, taking into account discount from the provider.

PROJECTS/VEHICLES	DISCOUNT FROM HBM (%)	Cost per project (€/P)
1	0	26923,7
2	0	26923,7
3	5	25942,8
4	5	25942,8
5	5	25942,8
6	5	25942,8
7	5	25942,8
8	12	24569,6
9	12	24569,6
10	12	24569,6