

# Workshop

## “Photovoltaics in Buildings”

**CARRIS**

16th March 2005



1980





1981



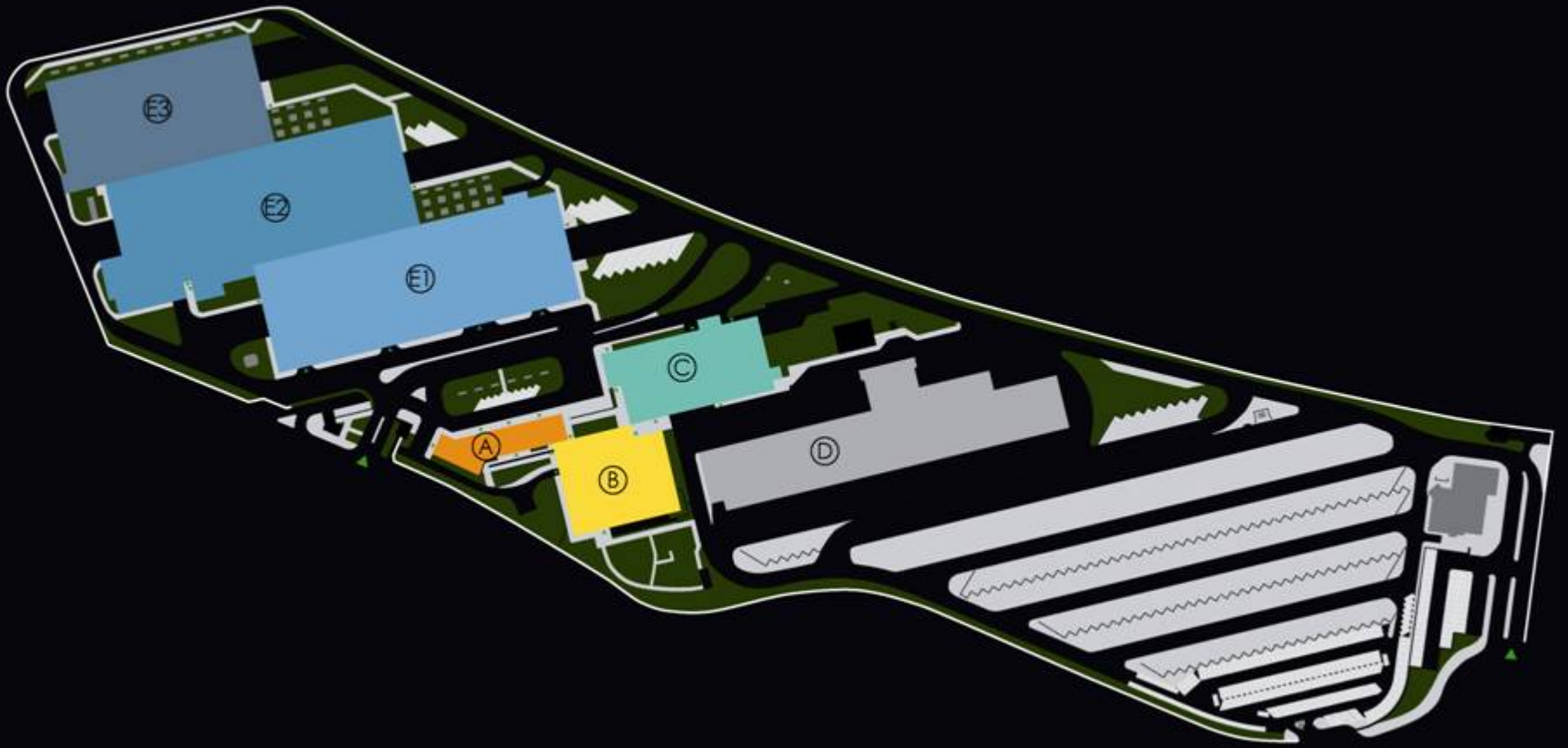
2005





Since 2003 a strategy began to take form in terms of the age average reduction of the circulation vehicles because this matter it's directly related with the negative results of the air quality and the security conditions in the streets.

Therefore, the age average of Carris' fleet that was before of 16 years will be less than 6 years until the end of 2005.



Miraflores complex



Edifício A



Edifício B



Edifício E



On the second phase which is still running the Architectural Cabinet "Miguel Arruda & Asociados" worked several projects to adapt the actual buildings to new programmatic demands . Beyond services installation, social zones will be equally created such as a cafeteria, a bar, a gymnasium, an auditorium, synaletic identification, etc.





The first building to be worked was the building "E"- Barn 1 floor 0. This building is part of a group of 3 barns on which the ground floor are turned to the main square. It started with the elaboration of the interior lay-outs but soon during the work some of the building front panels collapsed and some measures were taken in order to remove the panels and repair some wall fissures.



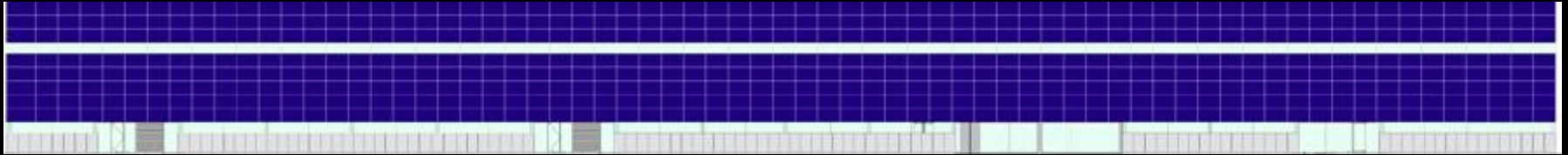


When the structure began to appear, the architect Miguel Arruda contacted me and suggested the idea of placing photovoltaic panels on the building front and asked me to contact Eng<sup>a</sup>. Maria João from the Superior Technical Institute of Lisbon, Department IN+

M	I	G	U	E	L
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While these aspects are being studied regarding what kind of photovoltaic system is going to be adapted to the building front, the architect Miguel Arruda has drawn a giant band panel with a lightning system for the night period with a modern design and revealing some Carris' history and patrimony.



140 meters x 10.80 meters – panel: 2 meters x 1.20 meters



From that contact and the protocol between Carris, IST and Miguel Arruda architect, became the opportunity of the happy conciliation between environment, technical and aesthetical aspects.

M	I	G	U	E	L
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My Direction and Carris Board of Administrators join with enthusiasm to this idea of contribute either in terms of renewing the company image and the environment as an actual concern, even regarding the increase of the final cost. However, the impact that the whole work area is going to suffer, considering that is 140m long by 10m high will be enormous and positive.