

## POLLUTION TESTS

### ② Accelerated ageing tests

An essential part of the development phase is to understand how the characteristics of a material could be changed during its lifetime.

When a system is subjected to electrical, climatic or environmental stresses, there is a risk that a part of its components may be damaged. The main factors are :

- Solar radiation (UV spectrum in particular)
- Rain
- Heating
- Salt fog
- Humidification

Assessment of the long term ability of composite or synthetic materials to withstand ageing is necessary. The laboratories have high performance resources using an accelerated ageing room to simulate environmental conditions and atmospheric factors, under operating voltage conditions. Unlike traditional trials, accelerated ageing tests generate severe climatic stresses for a relatively long period (ranging from weeks to a few months).

ACCELERATED AGEING ROOM CHARACTERISTICS		
SIZE	L = 9,6 m - l = 7,4 m - h = 9,5 m	
VOLUME	675 m <sup>3</sup>	
SOURCE 50 Hz	1 0 - 57,8 kV	2 0 - 170 kV
NUMBER OF LOCATIONS	4	
EQUIPMENT PER LOCATION	• 1 rain ramp • 1 salt fog ramp • 1 UV ramp	

		0	2	4	6	8	10	12	14	16	18	20	24 H
EXAMPLE OF DAILY AGEING CYCLE	Voltage 50 Hz												
	Rain												
	Heating 50°C												
	Humidification Hr 95%												
	Salt fog												
	Solar radiation simulation												



## POLLUTION TESTS

### MARTIGUES STATION:

#### Ageing tests under severe natural conditions

Understanding the long-term ageing mechanisms of an equipment, when exposed to industrial and maritime pollution.

Due to its exceptional situation, this facility allows to expose test objects to a strong level of pollution and to assess their behavior over time.

Situated on the Mediterranean shore near Martigues, besides a petrochemical complex, the experimental station benefits from about 3000 sunshine hours a year.

Various levels of voltage are available (50 Hz phase to earth voltage) : 245kV ; 141kV ; 58kV ; 13,8kV and 2,2kV.

Upon request ESDD / NSDD measures and qualitative chemical analyses of the pollution can be assessed. Observations are made under low luminosity and IR imaging are available.

The experimental station can accomodate a range of different test items such as insulators, instrument transformers, cable terminations, surge arresters...

The access to the site is secured.

Test objects are exposed to all seasonal weather cycles and endure extreme pollution levels.

The leakage current on any test object is monitored and compared to a reference which allows to know in real time the pollution level. In addition, a DDDG probe is installed.

The voltage of the different test bays is also monitored.

All the electric and meteorological parameters are registered via a dedicated data acquisition system?

The data are stored and accessible locally as well as from Les Renardières via a 3G connection.

