Zbigniew Woynarowski

THE PREDICTION OF AGEING MATERIALS DETERIORATION
UNDER ATMOSPHERIC INFLUENCIES

Based on the book of Miroslav Rychtera [1] the general features of the so called chronological transformation method are presented. Accordingly, reproducible laboratory tests may with acceptable probability in relatively short time produce in a given material deterioration effects similar which could be expected after 1,5 or 10 years of operation in every particular geographical location with sufficient long term reports of meteorological data.

With help of complicated computational procedures an Atlas of Africa was designed. On 32 maps and for over 500 locations are for various atmospheric stresses given in days of appropriated model tests duration data concerning humidity sorption, desorption, cyclic sorption and desorption, air temperature and microbiological stresses in electrical insulating materials so as corrosion stresses in copper, aluminium, brass and zinc and steel.

The results of long term exposition of different materials in different regions with severe climatic environmental conditions confirmed an acceptable agreement between ageing deterioration of material properties in laboratory model tests and long period real operation.

The chronological transformation of real atmospheric stresses into a given model test time can be applied to following problems:

I. Classification of atmospheric stress acting on technical materials in various geographical regions.

Prof. Zbigniew Woynarowski - The High Voltage and Electrical Apparatus Institute of the Gdańsk Technical University, Poland

II. Optimization of material selection, production technology or protective measures applied to products designed for operation under severe environmental conditions.

III. Optimization of laboratory tests modelling the action of atmospherical influencies.

R e f e r e n c e s

1. Rychtera M.: Atmospheric deterioration of technological materials. A technoclimatic atlas. Part A: Africa 1985. Akademia Prague, Elsevier, Amsterdam.