

**PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP (1)**

<b>WG* N° D1.68</b>	<b>Name of Convenor</b> Massimo POMPILI (ITALY) <b>E-mail address:</b> massimo.pompili@uniroma1.it
<b>Technical Issues # (2) : 2</b>	<b>Strategic Directions # (3) : 2 / 3</b>
<b>The WG applies to distribution networks (4): Yes</b>	
<b>Title of the Group: Natural and synthetic esters - Evaluation of the performance under fire and the impact on environment</b>	
<p><b>Scope, deliverables and proposed time schedule of the Group :</b></p> <p><b>Background :</b></p> <p>IEC 61099 “Specifications for unused synthetic organic esters for electrical purposes” was revised in August 2010 (Ed. 2.0) and IEC 62770 Ed 1.0 “Unused natural esters for transformers and similar electrical equipment” was published in November 2013. Just after, IEC TC10 launched the project for preparation of a user’s maintenance guideline for natural esters. This proposal (Convenor: Clair Claiborn, US) was unanimously approved in January 2015 under the code IEC 62975.</p> <p>Natural and synthetic ester insulating liquids are being applied in electrical equipment worldwide, primarily in distribution transformers. These liquids are also being increasingly used in power transformers. It is estimated that there are over ½ million distribution transformers and several thousands of small, medium and large liquid immersed power transformers using natural esters. The increased usage of the natural ester insulating liquids is based on their high biodegradability, sustainability, superior fire safety, and the protection factor they provide to cellulose-based solid insulation systems in transformers.</p> <p>A point of considerable interest is now to assess specifically the real advantages in the use of synthetic and natural esters, in comparison with mineral oils, in terms of fire behavior and impact on the environment in case of possible spills in soil.</p> <p><b>Scope :</b></p> <ol style="list-style-type: none"> <li>1. Fire behavior comparison between natural and synthetic esters and mineral insulating oils;</li> <li>2. Environmental impact comparison in case of spills of natural and synthetic esters and mineral insulating oils;</li> </ol> <p><b>Deliverables :</b> Technical brochure, summary report in Electra and Tutorial Presentation.</p> <p><b>Time Schedule :</b> start : January 2017 <span style="float: right;"><b>Final report :</b> 2020</span></p>	
<p><b>Approval by Technical Committee Chairman :</b> </p> <p><b>Date :</b> 17/01/2017</p>	

(1) Joint Working Group (JWG) - (2) See attached table 1 – (3) See attached table 2  
(4) Delete as appropriate

**Table 1: Technical Issues of the TC project "Network of the Future" (cf. Electra 256 June 2011)**

<b>1</b>	Active Distribution Networks resulting in bidirectional flows within distribution level and to the upstream network.
<b>2</b>	The application of advanced metering and resulting massive need for exchange of information.
<b>3</b>	The growth in the application of HVDC and power electronics at all voltage levels and its impact on power quality, system control, and system security, and standardisation.
<b>4</b>	The need for the development and massive installation of energy storage systems, and the impact this can have on the power system development and operation.
<b>5</b>	New concepts for system operation and control to take account of active customer interactions and different generation types.
<b>6</b>	New concepts for protection to respond to the developing grid and different characteristics of generation.
<b>7</b>	New concepts in planning to take into account increasing environmental constraints, and new technology solutions for active and reactive power flow control.
<b>8</b>	New tools for system technical performance assessment, because of new Customer, Generator and Network characteristics.
<b>9</b>	Increase of right of way capacity and use of overhead, underground and subsea infrastructure, and its consequence on the technical performance and reliability of the network.
<b>10</b>	An increasing need for keeping Stakeholders aware of the technical and commercial consequences and keeping them engaged during the development of the network of the future.

**Table 2: Strategic directions of the TC (cf. Electra 249 April 2010)**

<b>1</b>	The electrical power system of the future
<b>2</b>	Making the best use of the existing system
<b>3</b>	Focus on the environment and sustainability
<b>4</b>	Preparation of material readable for non technical audience