TC18X/Sec0014/REP

BUSINESS PLAN

CENELEC/TC or SC	Secretariat	Date
18X	Norway	2012-12-27

TC title: **Electrical installations of ships and of mobile and fixed offshore units**

A Background

CENELEC TC 18X (CLC/TC 18X) was established in October 2011. The proposal was submitted by Norway, who holds the Secretariat for CLC/SR 18.

The background for the proposal was several documents like EU COM(2010) 560 "Facing the challenge of the safety of offshore oil and gas activities", SEC(2010) 1193 "Facing the challenge of the safety of offshore oil and gas" and "2010 – 2013 Action Plan for European Standardization", where it seems clear that EU intended to introduce EU standards for the offshore industry, including mobile units.

In the past CENELEC BT decided that ships and offshore needed pure international standards. CEN (and ISO) are preparing standards for the offshore industry and many of these are based on API standards. Some of these standards are containing requirements to electrical systems/installations, and the reason for proposing the establishment of a CLC/TC 18X was to avoid differences between the CEN standards and IEC/TC 18 standards. After the blow-out in the Gulf of Mexico, the EC gathered European experts in Brussels as a first step to issue a mandate to the ESOs for standards preventing something similar to happen in Europe. CENELEC should take part in such a mandate. So far, there has been a lack of European (and international) standards for electrical installations on sub-sea equipment.

It is the intention, as far as possible, to take the work of IEC/TC 18 as basis for the work in CLC/TC 18X.

CLC/TC 18X has one subcommittee, SC 18XC, Subsea equipment.

While IEC/TC 18 has a subcommittee SC 18A for Cables, it is considered that cables are an international rather than a regional concern and therefore there is no perceived need to prepare European Cable Standards. There is therefore no need seen for a CENELEC subcommittee SC 18XA for Cables.

The Recreational Craft Directive is applicable to CLC/TC 18X.

B Business Environment

B.1 General

In economic terms the investment in the electrical equipment and installation on new ships and offshore installations continues to increase as a percentage on the overall value of the vessel/offshore unit.

Ship owners, owners of offshore units, Builders, Insurers and other Authorities are interested in consistent standards for electrical installations. IEC 60092 and IEC 61892 series of standards, as well as other standards prepared by IEC/TC 18 satisfies this requirement.

For offshore units, there is a trend towards more complex installations, often combining both production and storage facilities, as in the so called Floating Production and Storage Facilities (FPSO). There is also an increased tendency towards large subsea installations, where e.g. pumping and compression takes place subsea.

As the offshore industry is going into arctic areas, this is presenting special challenges with regard to the environmental conditions.

At the request of the offshore industry IEC/TC 18 has prepared a separate standard specifically for the international offshore industry, IEC 61892.

It should be noted that IEC/TC 18 has established a formal relationship with the International Maritime Organisation (IMO) with the scope to collaborate with this Organization in the field of electrical systems on board ships and mobile offshore units.

Presently, the industry is lacking standards for subsea equipment.

Equipment manufacturers include both big multinational companies as well as many international and national small and medium sized companies.

The major ship yards are located in China, Japan and South Korea for bulk carriers, LNG, FPSO etc, while passenger vessels mainly are manufactured in Europe (Finland, France, Germany, Italy).

There is a tendency to more and more specialisation of the yards, most of the large cruise ships are built in European yards. Norwegian yards are building specialized offshore supply and anchor handling vessels.

Offshore production platforms are normally built at a yard not too far from the location where the platform shall be installed while mobile drilling units and FPSOs are built at yards specialising in this type of units. Subsea equipment is mainly being built by manufacturers specialising in such equipment.

Currently 11 countries are participating in the work of CLC/TC 18X. SC 18XC is presently being established.

B.2 Market demand

The IEC 60092 series of standards for which IEC/TC 18 is responsible is referenced in the International Maritime Organisation - Safety of Life at Sea Convention (SOLAS) and IEC 61892 is a referenced document in the Code for Mobile Offshore Drilling Units (MODU Code).

SOLAS is applicable to all commercial seagoing ships of 500 gross tonnes and above, thus the standards are used extensively internationally. For commercial ships below this level the mandatory requirements for electrical installation is usually set by the National Flag State Authority where the ship is registered. Many such Authorities world-wide rely on the IEC 60092 standards in preference to developing their own standards.

The IEC 60092 series of Standards, and to some extent the IEC 61892 series are employed world-wide by naval architects, marine engieering design and consulting companies, design houses, ship and offshore unit builders, cable manufaturers, electrical equipment manufacturers, installers, classification bodies, test houses, ship owners, operators and national and international authorities.

The IEC standards are used for supporting regulations and as basis for contracts, and often replace the Statutory Authority documents.

As technology continues to advance there will remain a need for the TC/SC to produce new standards and to maintain the existing ones.

There is a demand from the market for international standards for subsea equipment for the oil and gas industry.

B.3 Trends in technology

As the electrical power requirements of modern ships continues to increase there is a trend to higher operating voltages for power consumers, propulsion and machinery auxiliaries.

Currently the most important technical developments in the shipbuilding and offshore industry relate to the increasing extensive use of computer hardware and software control and monitoring systems resulting in distributed machinery control and the introduction of additional and more sophisticated passenger/crew safety systems including addressable fire alarm and low level lighting systems, also passenger and crew address systems. Problems are already being seen with complex systems on board vessels where the advances in complexity have outstripped the ability of the builders and operators to understand and deal with the systems installed.

There is also an increasing awareness of the dangers of fire and the consequences of fire spread and the dangers of smoke products. For this reasons, fire performances as Flame Retardancy, Fire resistance, Low smoke, No corrosivity, Halogen free materials are more requested, both for electrical equipment and for cables.

There is a growing awareness of the effects of electromagnetic interference and much discussion and effort is going into the development of comprehensive EMC standards and standards for VFD cables (Variable Frequency Drives).

The shipping industry is experiencing a return to electric propulsion systems which has resulted from the development of power electronics. A move to variable speed auxiliary drives is also being seen for the same reasons.

Energy efficiency with the purpose of reducing greenhouse gas emision from ships is under discussion within IMO. This may lead to more efficient power generation and distribution systems. Hybrid solutions will require improved and modified standards.

Electric propulsion system, and hybrid systems are also being introduced for recreational crafts.

In the offshore industry there is a trend to use variable speed drives (VSD) for supply of large turbines and compressors, instead of using gas turbines.

Fibre optics is becoming common. However, neither IEC/TC 18 nor IEC/SC 18A have developed any standards dealing with fibre optics but as demand grows there may be a need for standards dealing with their manufacture and use for a marine or offshore environment. It is anticipated that any standards will be developed by IEC as being of worldwide concern though it may be at the request of CLC/TC 18X.

Most of technical comments above apply equally to offshore units including the requirements of SOLAS in respect of some mobile units.

For subsea equipment, the tendency is as far as possible to use "standard" industrial equipment, but adapted to the subsea environment. It is important that the equipment can be easily retrieved for possible repair and replacement.

B.4 Market trends

The trends in shipping are to a continuance of the current ship types coupled with the introduction of larger container and passenger ships, the introduction of high speed vessels of a variety of types and sizes with the accompanying requirements for reduction in weight of all installed machinery and systems including the electrical installation.

The increase in the size of vessels and of the installed electrical load is leading to the use of higher voltage systems. The return to electric propulsion systems coupled with the advances in solid state power devices and the need for variable speed auxiliary drives has led to more strict control of EMC which is reflected in the extensive updating of the TC’s EMC standard. There is also a considerable interest within the industry for DC system architecture which may require a further extensive updating of the entire range of standards.

The offshore industry is moving towards arctic areas, and this is causing new challenges, especially with regard to the environmental conditions. The tendency to power supply from shore and development of projects with installed power more than 150 MW, as e.g. for floating LNG units may require new standards. Sub-sea installations are becoming more frequent. So far, there are no IEC or CENELEC standards dealing with sub-sea installations.

B.5 Ecological environment

CLC/TC 18X is primarily concerned with the installation of electrical equipment, the ultimate disposal of the installation on board the ship or offshore unit is beyond the scope of the committee. However, CLC/TC 18X is aware of that laws in different countries focus on the restrictions on the usage of hazardous materials, substances and processes.

However, the committees are conscious of the need to protect the environment and thus strive to ensure that the materials employed in the installations are ecologically friendly and cause the minimum of pollution possible.

In order to reduce the pollution some offshore production fields are now supplied with power from shore, instead of using locally generated power by means of gas turbines.

B.6 Involvement of societal stakeholders

The work of CLC/TC 18X is of interest to National Authorities and international organisations as IMO. However, they are only to a limited extent actively participating in the work.

B.7 Involvement of SMEs

Most companies involved in design, production and operation of ships and offshore units are large enterprises. Some SMEs which are specialists in design and manufacturing of special equipment exist. However, it is difficult to obtain participation from SMEs at national level.

C System approach aspects

CLC/TC 18X will actively continue to promote the establishment of liaisons to other committees; cooperation with system committees is our focus.

System Committees (CLC/TC 18X as a supplier of standards)	None	
Product Committees (CLC/TC 18X as a customer of standards)	CLC/TC 2	Rotating machinery
	IEC/TC 17	Switchgear and controlgear
	CLC/TC 17B	Low-voltage switchgear and controlgear
	IEC/SC 17C	High-voltage switchgear and controlgear assemblies
	CLC/TC 21X	Secondary cells and batteries
	IEC/SC 21A	Secondary cells and batteries containing alkaline or other non-acid electrolytes
	IEC/SC 23H	Industrial plugs and socket outlets
	IEC/TC 27	Industrial electroheating equipment
	CLC/TC 31	Equipment for explosive atmospheres
	IEC/SC 31J	Classification of hazardous areas and installation requirements
	IEC/TC 34	Lamps and related equipment
	IEC/SC 34A	Lamps
	IEC/SC 34B	Lamp caps and holders
	IEC/SC 34C	Auxiliaries for lamps
	IEC/SC 34D	Luminaires
	CLC/TC 64	Electrical installations and protection against electric shock
	IEC/TC 77	Electromagnetic compatibility
	IEC/TC 80	Maritime navigation and radiocommunication equipment and systems
Other Committees (Horizontal committees that produce standards used by CLC/TC 18X)	IEC/TC 70	Degree of protection by enclosures
	IEC/TC 104	Environmental conditions, classification and methods of test
Other Committees (Committees that produce standards similar to CLC/TC 18X to be in liaison with for technical consistency)	None	

D Objectives and strategies (3 to 5 years)

Objective 1

Develop, in cooperation with IEC/TC 18 and ISO/TC 188, Standard for Electric Propulsion System.

Objective 2

Revision of IEC 60092-507, in accordance with the IEC/TC 18 - ISO/TC 188 agreement.

Objective 3

Prepare standards for subsea equipment. The National TCs are invited to propose standards for subsea equipment, together with justification.

Objective 4

Prepare those standards for offshore which may be required by any new Mandate from the EU commission.

E Action plan

Objective 1	Develop, in cooperation with IEC/TC 18 and ISO/TC 188 Standard for Electric Propulsion System.	
Strategies	Liaise with IEC/TC 18	Target date: 2013
Objective 2	Revision of IEC 60092-507, in accordance with the IEC/TC 18 - ISO/TC 188 agreement.	
Strategies	Liaise with IEC/TC 18	Target date: 2014
Objective 3	Prepare standards for subsea equipment	
Strategies	Propose new standards as required by the industry	Target date: 2014
	Invite IEC/TC 18to prepare the standards, in accordance with the Dresden Agreement	Target date: 2014
Objective 4	Prepare those standards for offshore which may be required by any new Mandate from the EU commission	
Strategies	Review of existing IEC/TC 18standards for compliance with any new Mandate and relevant Directives	As required by the relevant Mandate

F Useful links to CENELEC web site

TC home page giving access to Membership, TC/SC Officers, Scope, Publications, Work programme [password-protected area].

http://www.cenelec.eu/dyn/www/f?p=104:7:3920176712054603:::FSP_ORG_ID,FSP_LANG_ID:10752,25

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