A.7.1.

Subsea XLPE cables

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XLPE is the insulation of choice for modern HV (36 - 161 kV) and EHV (161 kV) land cable systems. Since its introduction for commercial HV cable systems in the early 1970's XLPE has been used in ever more challenging circumstances. A growing and challenging application area is that of subsea cables.

In todays subsea cable environment we find

1. very long length HV XLPE cable systems being used in major subsea projects [1,2]
2. novel integrated solutions for direct electrical heating of oil flowlines to improve productivity of seabed oil exploration [3]
3. the excellent properties of copolymer XLPE makes it increasingly the choice for wet design MV cables using bonded screens [4]
4. subsea HVDC extruded cables - Cross Sound 150 kV 30km [5]
5. the use of XLPE for subsea cables, for both dry and wet designs, is increasing rapidly (Figure 1)

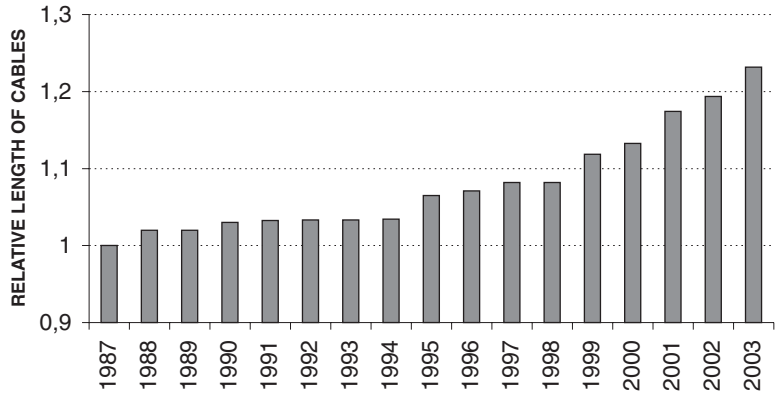

Fig. 1. Evolution of XLPE for subsea use since 1987

This contribution will identify the factors that have led to the increasing use of XLPE Subsea cables, the advances that have been made today and identify some solutions to the challenges ahead.

The challenges include

- decreased production times (increased speed of extrusion & decreased time for downstream processes) [6]
- improved mechanical and moisture protection [7]
- novel temperature conditions
- approval methods to assure long life of both the insulation system [4] and the barrier system

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