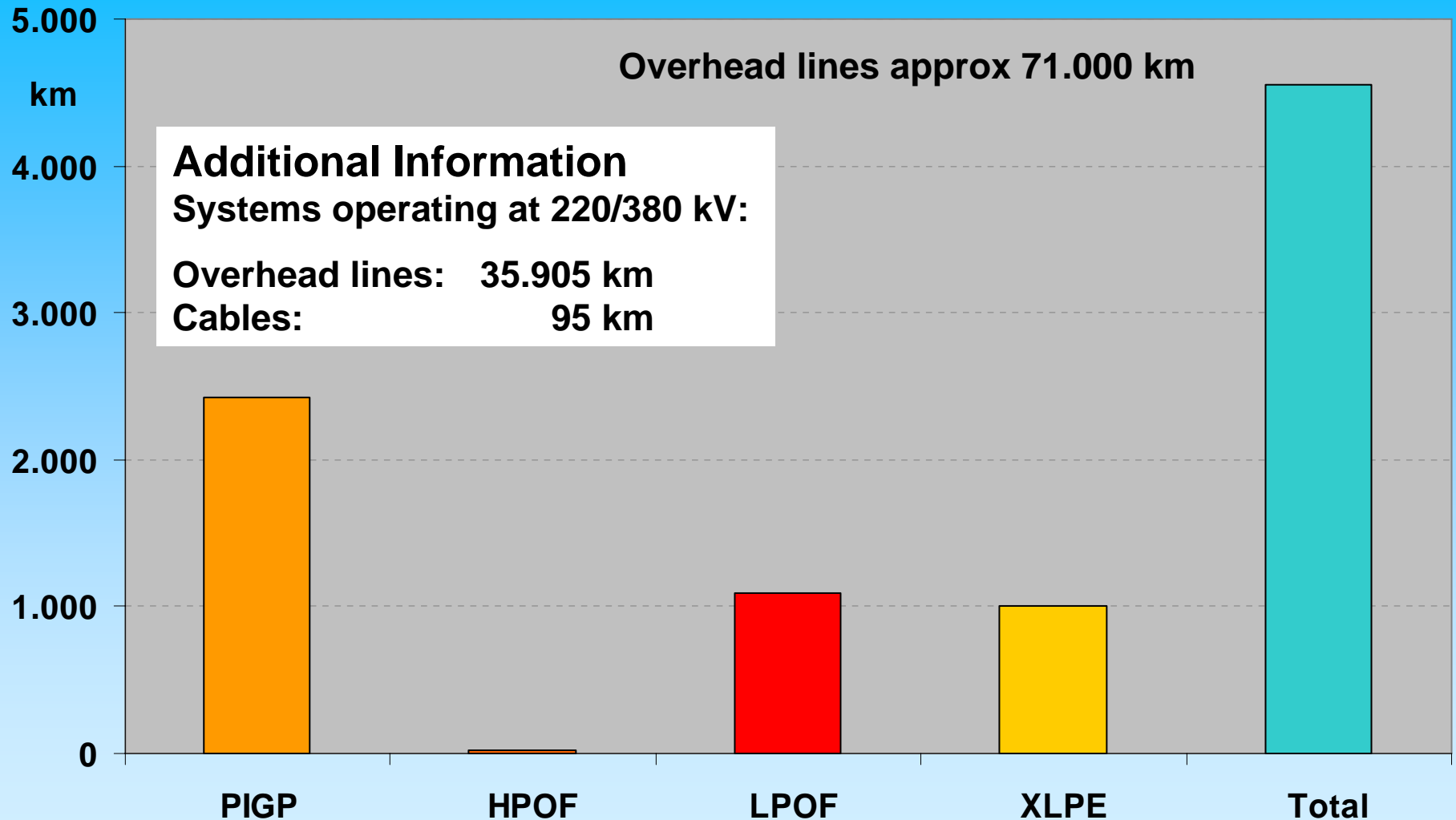


Achievement and experience in service of long length HV and EHV electrical links by insulated power cables in the world

Information from Germany

Dr. Dirk Rittinghaus, [energycableconsult](http://www.energycableconsult.com)

Variety of 110 kV cables installed in Germany; System lengths (Utilities only)



Existing HV and EHV Utility Networks in Germany as of January 2007



Source: VDN

Extension of the HV and EHV Network in Germany as planned in 2007 until 2015



- Netzausbau bis 2007**
- 1 2 x Querrregler in Diele
- 2 Netzverstärkung Thüringen
- 3 220/380-kV-Umstellung Redwitz – Kriegenbrunn
- 4 Krümmel – Görries, 75 km
- 5 Reicheneck – Rommelsbach, 380 kV-Anschluss an Metzingen
- 6 Mühlhausen – Neckarems, Anschluss an 380 kV

- Netzausbau 2007 bis 2010**
- 1 Audorf – Dollern, 110 km
- 2 Ganderksee – Wehrendorf, 80 km
- 3 Neuenhagen – Bertikow/Vierraden, 110 km
- 4 Lauchstädt – Vieselbach, 80 km
- 5 Vieselbach – Altenfeld, 80 km
- 6 Altenfeld – Redwitz, 60 km
- 7 220/380-kV-Umstellung Redwitz – Grafenrheinfeld
- 8 Zubesellung Bechterdissen-Eisen – Twistetal
- 9 220/380-kV-Umstellung Irching – Raitersaich

- Netzausbau 2010 bis 2015**
 - 1 Diele – Niederrhein, 200 km
 - 2 Wahle – Mecklar, 190 km
 - 3 Zubesellung Bergkamen – Gersteinwerk
 - 4 Zubesellung Krietal – Punkt Eschborn
- Quelle: VDN, Deutsche Energie-Agentur

Source: VDN

400 kV AC cable link of 180 km in Germany: Outcome of an quick estimate

Total cost approx. 620 Mio €

DC-System: approx. 1/2 AC System

S_n : 1.700 MVA

P_v : 190 kW at S_n

S_r : 3.771 MVAR

→ 21 reaktive
Compensators
à 180 MVAR



No consideration of
- right of way
- losses
- etc.