

enertechnos

better electricity

January 2019



We work with
Innovate UK

The problems

- Transmission and distribution system losses¹
 - Global: 10.6%
 - N. America: 8.7%
 - W. Europe: 7.2%
- Losses are costly
 - UK: losses of 26,554 GWh 2016 - 2017²
 - Enough to power 7 million homes
 - Cost £1.1 billion per year
 - 1.5% of UK's total CO₂ emissions attributable to losses³

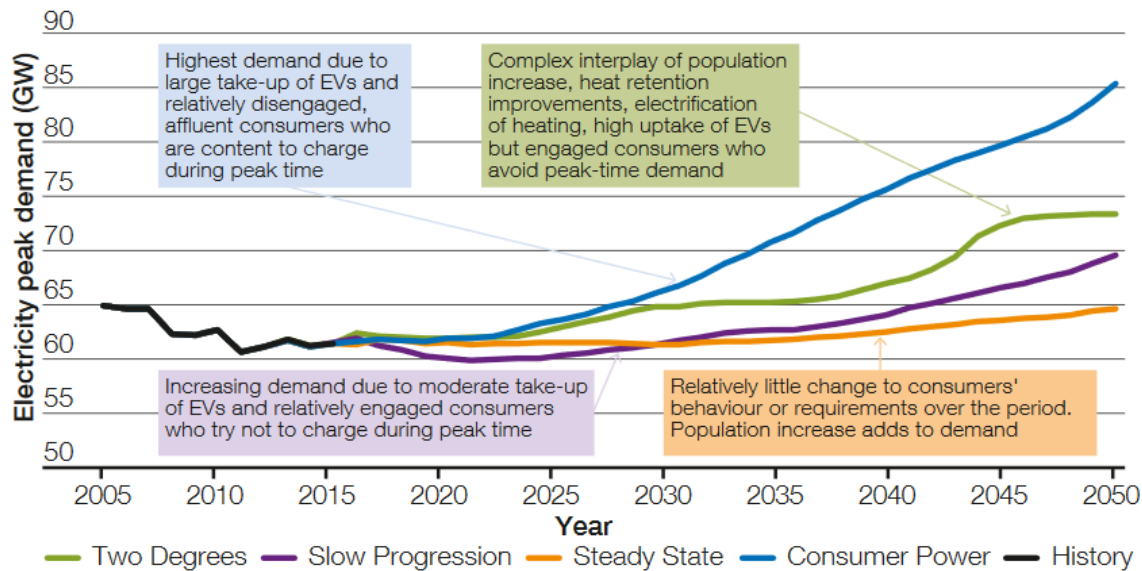
¹ Frost and Sullivan, 2013

² BEIS, Digest of UK Energy Statistics (DUKES) report 2018

³ Ofgem, Losses Incentive Mechanisms, 2014

National Grid FES comparison

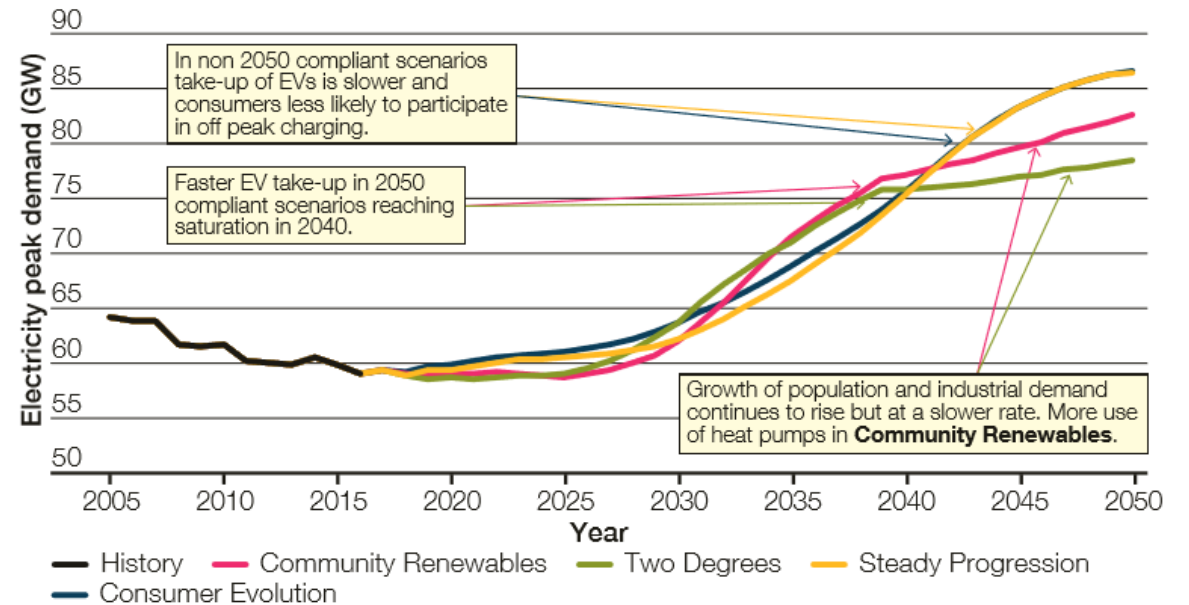
Figure 3.2
Electricity peak demand



2017 report

Charts show same comparison bases, 12 months apart, by same team of specialists at UK National Grid. 2017 report has 3/4 peak demand scenarios in 2050 in range 65 - 75GWh. In 2018 4/4 above 77GWh. Huge change in forecast.

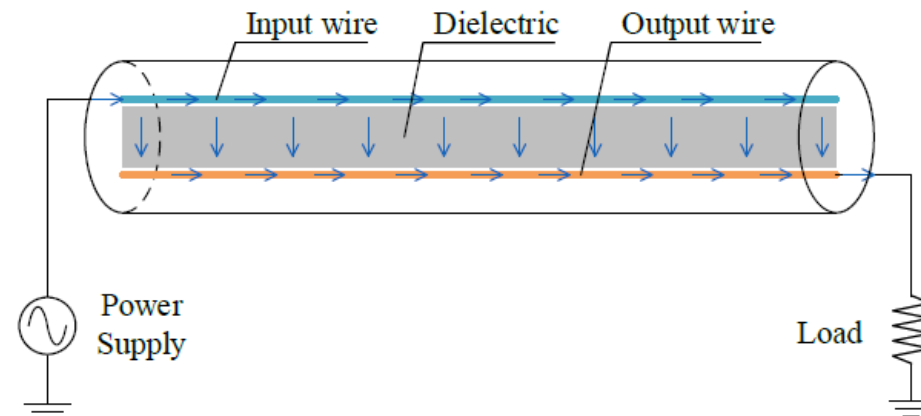
Figure 4.2
Electricity peak demand (including losses)



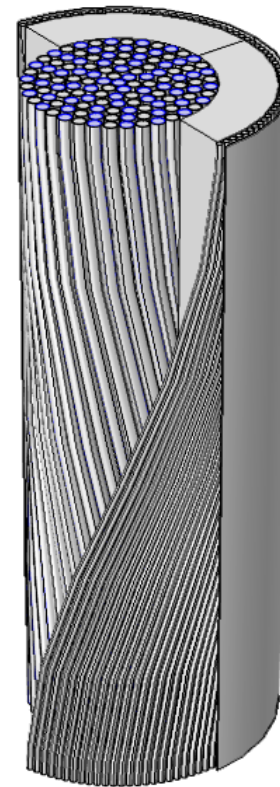
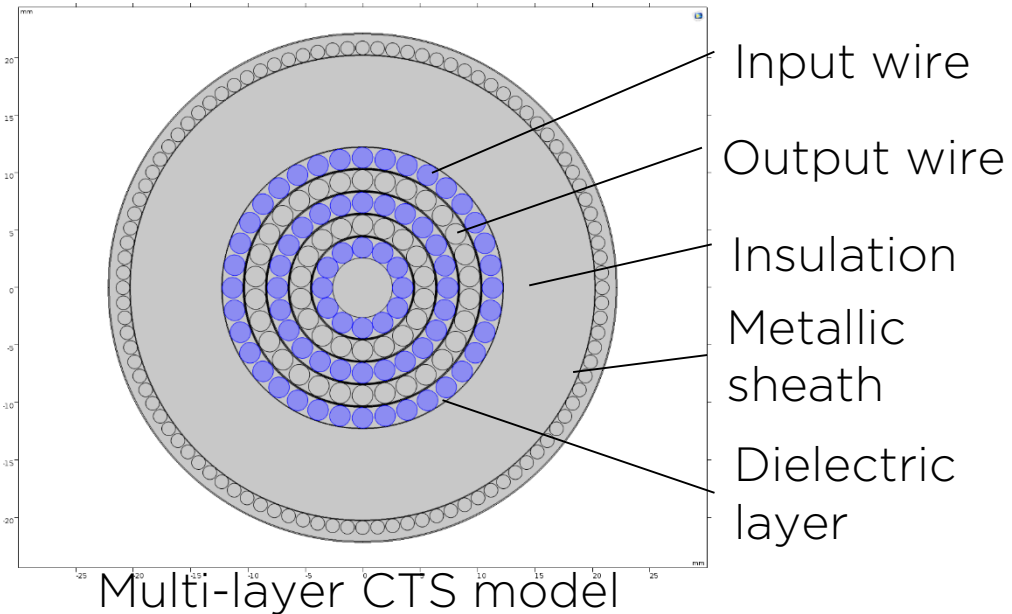
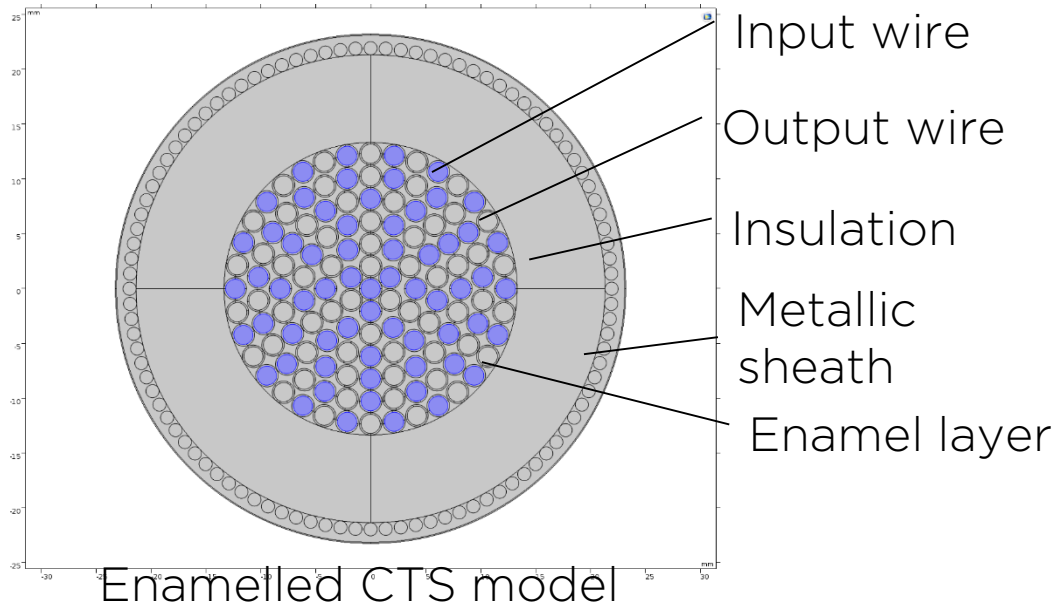
2018 report

The solution: Capacitive Transfer System (CTS)

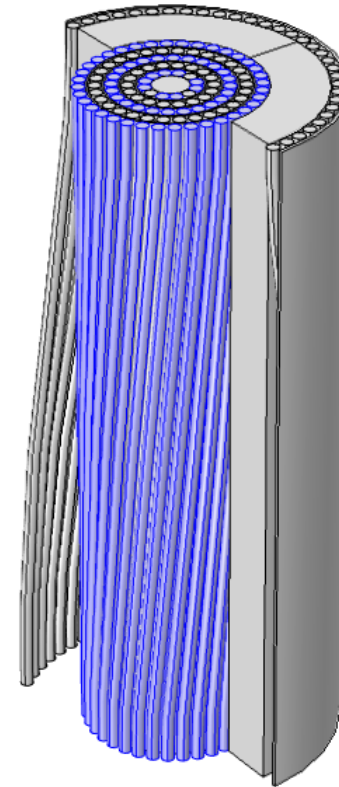
- Lower losses than conventional cable
- Can go multiple times further underground
- Remove the need to use pylons where sensitive
- Compatibility: can be combined with existing system
- Made on existing cable-making equipment
- Enhances capacity of present infrastructure



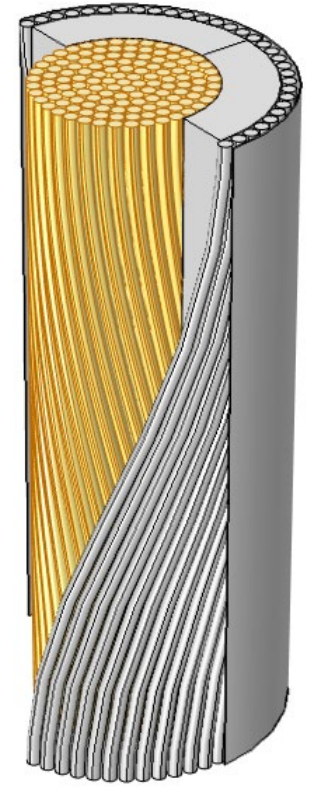
CTS cable types



Enamelled CTS



Multi-layer CTS



Conventional cable

Market

- Cable and Overhead Line (OHL) market worth \$56bn in 2016, growing to \$90bn in 2020⁶ globally
- Grid reinforcement projects: \$42bn in 2016-20 from wind-generated power alone⁶
- USA Smart Grid investment > \$600bn 2012-20⁷

⁶ Global Data, Power T & D Cables Report, Analysis to 2020

⁷ US Electric Power Research Institute [EPRI], 2011

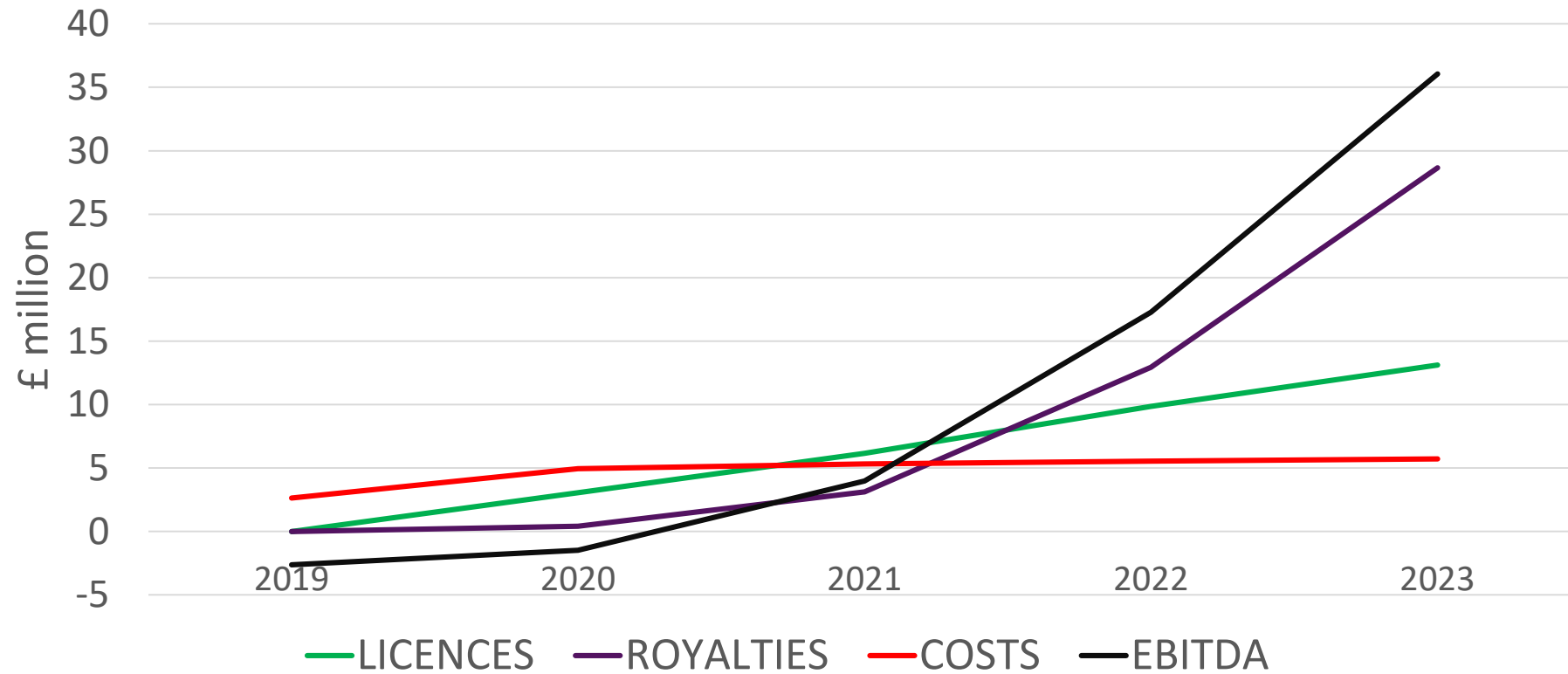
Team and Board

- Dominic Quennell – Managing Director
 - Globally experienced entrepreneur with 35+ years' experience of growing successful businesses in high-technology areas
- Gareth O'Brien – Operations Director
 - Civil Engineering and Computer Engineering degrees
 - Worked in Europe and US
- Dr Mansour Salehi-Moghadam – Senior Research Engineer
 - Experienced practical electrical engineer with PhD from Brunel University
 - Has worked on the CTS project for five years
- Dr Yang Yang
 - Degrees from Wuhan University, China, in Electrical Engineering and Automation
 - PhD in Engineering from Glasgow Caledonian University, 'Development of on-line measurement techniques for power cables'.
 - excellent skills in MATLAB and COMSOL computer modelling suites
- Jeremy Edwards – Finance Director
 - 30+ years experience across a broad range of businesses
- Charles Lucas-Clements – Business Development Director
 - Chemical Engineer
 - 35+ years in energy sector, oil and gas

Business model

- Patented IP
 - International
 - Several different patent families
- License to cable manufacturers (first licence already sold)
- Engage with end-user market (LOI from leading UK DNO already signed)

Financials



Financials

- Established 2014
- Raised £3.1 million from private investors
- Raising further £4 million to reach full commercialisation
 - Move from TRL 6 to TRL 9
 - Invest in sales and marketing
 - Deeper engagement with end-users and cable manufacturers

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Thank you!

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