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# POWER PYLONS OF THE FUTURE





## THE SITUATION

### THE PAST

- Associated With Fossil Fuels
- Very Low Acceptance

### THE FUTURE

- Positive Image
- Public Acceptance



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EXAMPLE OF EXISTING PYLONS

“A POSITIVE IMAGE”

### THE DESIGN PYLON

Denmark, Hobro-Haverslev

1x400 kV / 2x1.377A / 1.9 MV

25 km / 80 pylons

1<sup>st</sup>. prize in an Int. Competition

Client: Energinet.dk

Energized 2006



*“The pylons have been very well received by the locals, who call them Magic Wands”.*

Henning Øbro,  
Senior Project Manager,  
Energinet.dk

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EXAMPLE OF EXISTING PYLONS

“SAVING TROUBLE - PUBLIC ACCEPTANCE”

### THE EAGLE PYLON

Denmark, Kassø-Tjele

2x400 kV / 4.000 A / 2x2.7 MV

200 km / 506 Pylons

Client: Energinet.dk

Energized 2014



*“The neighbours have accepted the towers and are fascinated and proud of the new design”.*

Christian Jensen  
Executive Project Manager,  
Energinet.dk



“38% LOWER THAN EXISTING LATTICE TOWERS”

T-PYLON

United Kingdom

2x400 kV

1<sup>st</sup>. prize in an International Competition

Client: National Grid

Testline 2014

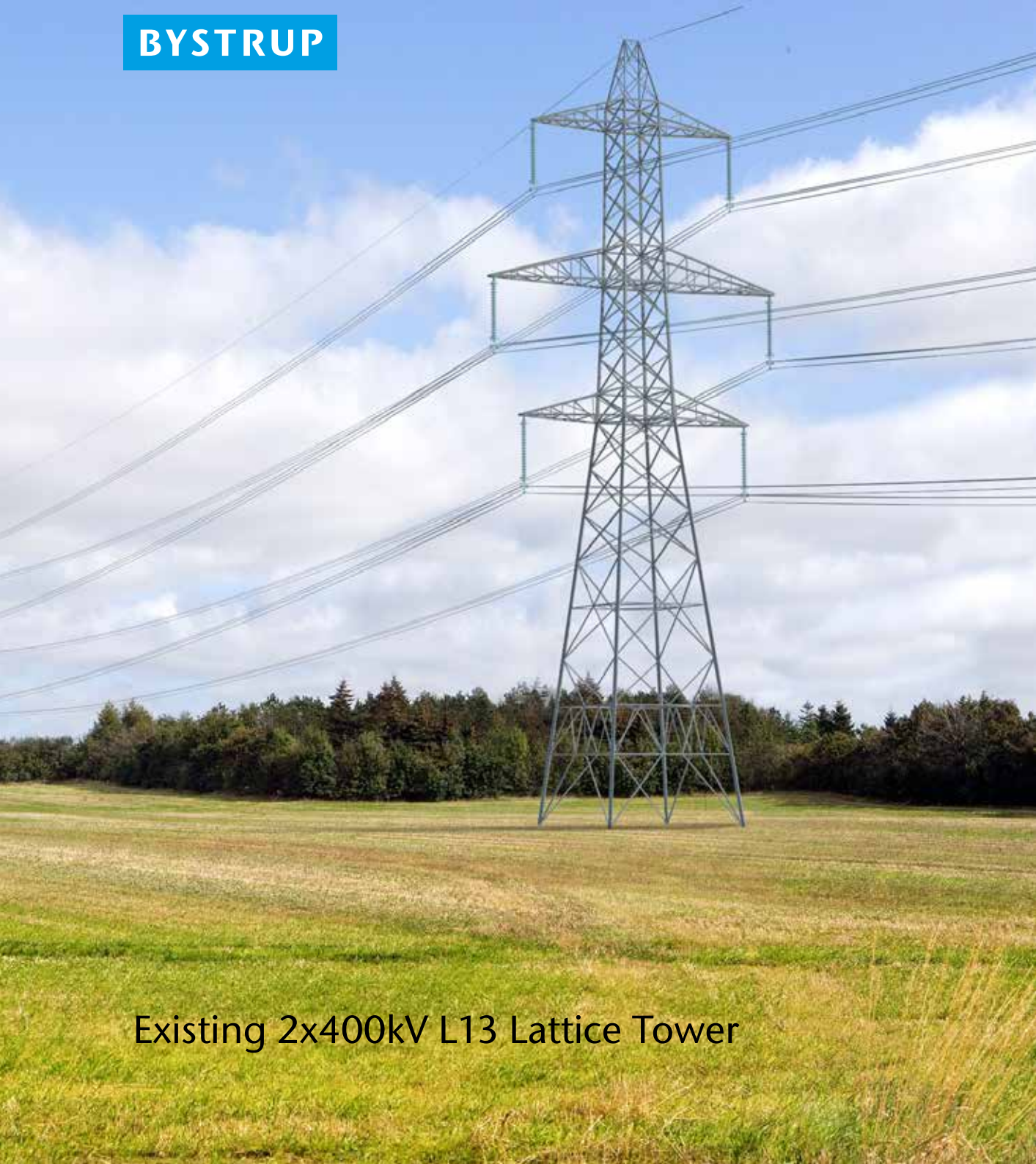
Energized from 2017



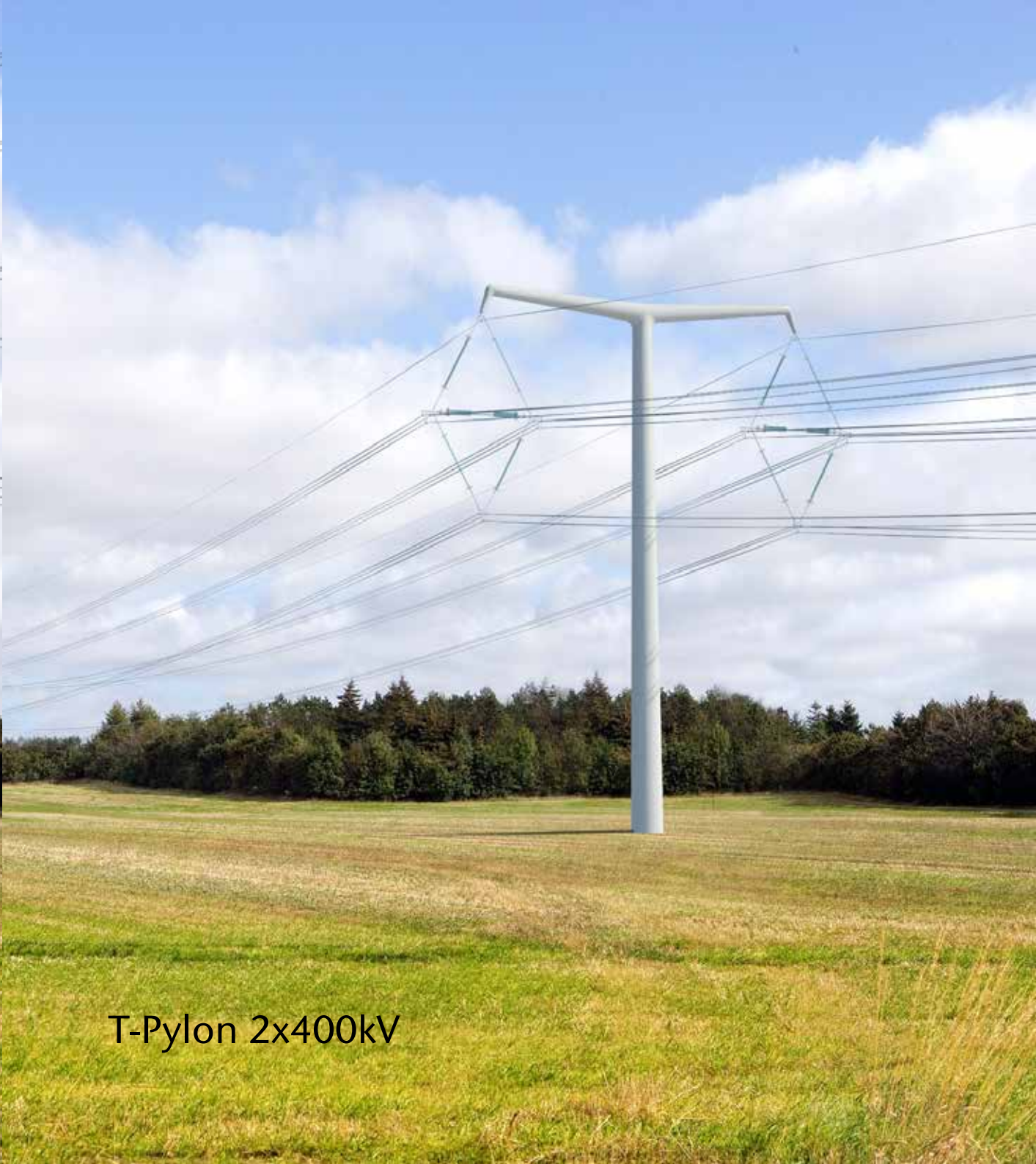
*In the T-Pylon we have a design that has the potential to be a real improvement on the steel lattice tower.*

Nick Winsor  
Executive Director,  
National Grid.





Existing 2x400kV L13 Lattice Tower



T-Pylon 2x400kV

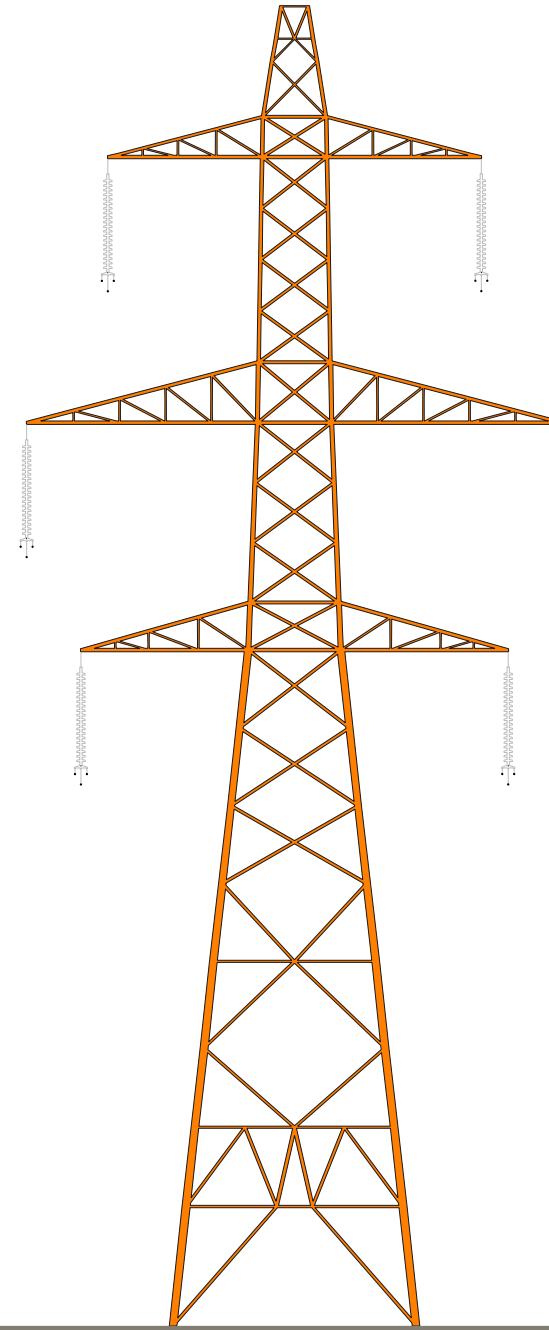
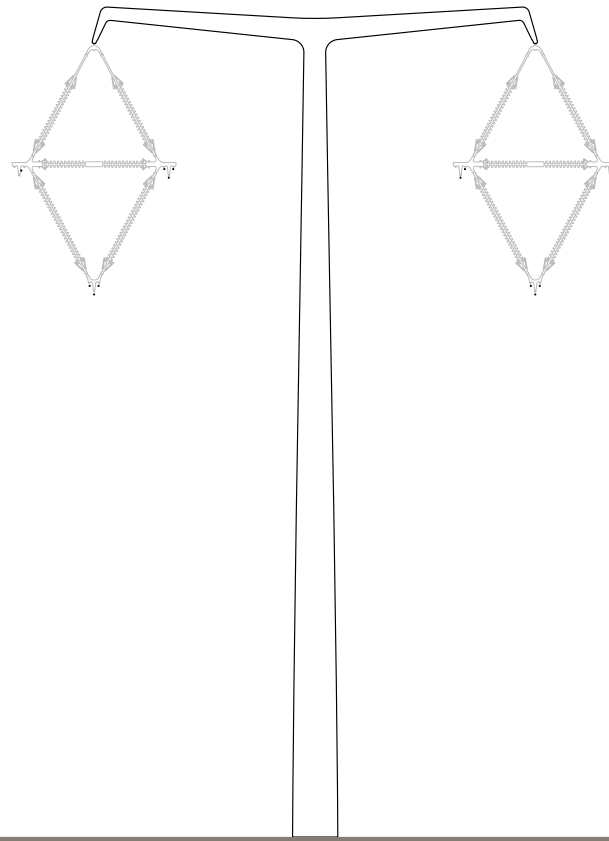


## SMALLER DESIGN

- 38% lower than existing lattice towers

T-Pylon (UK)

35m  
(-38%)



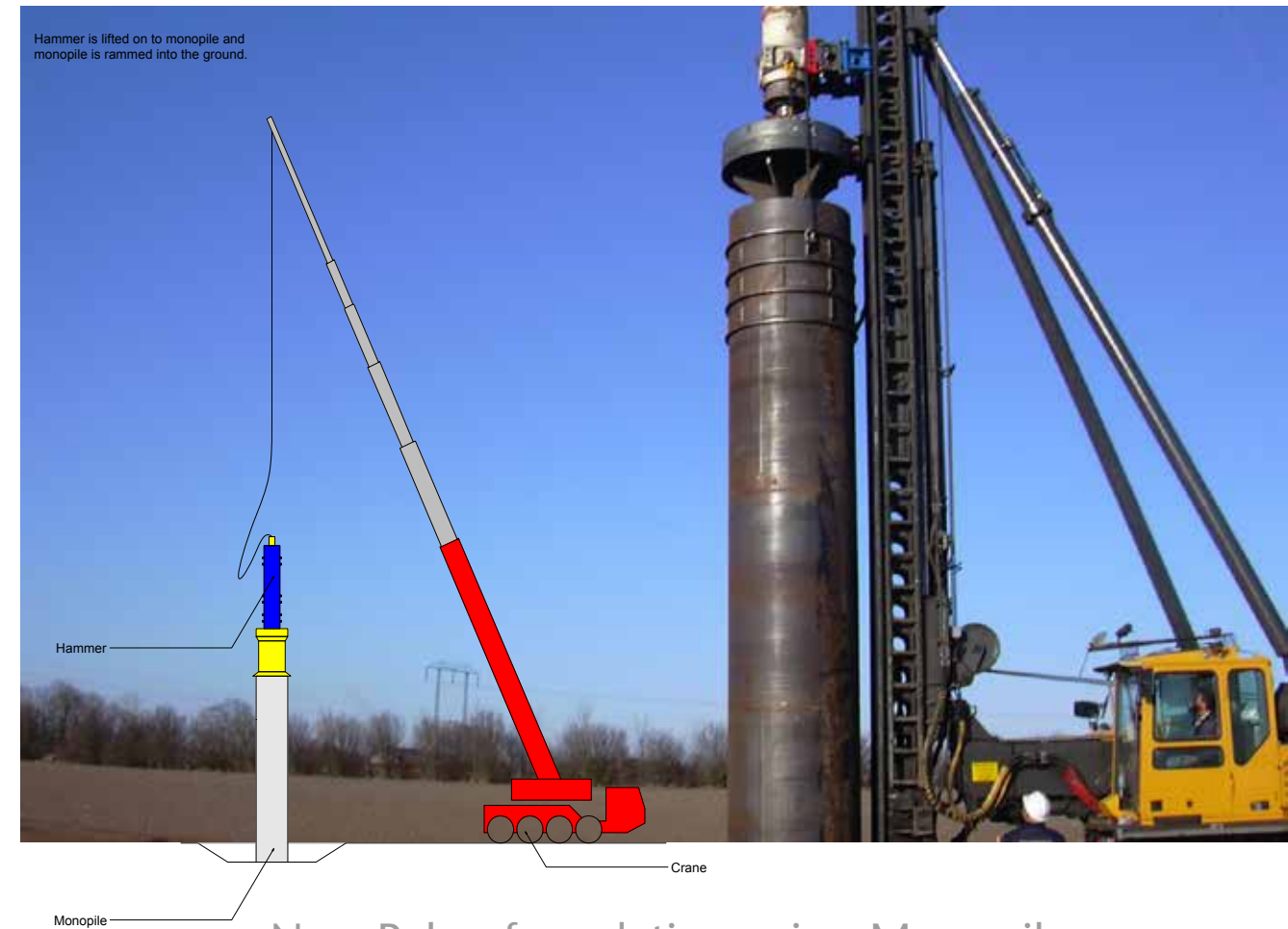
L13 (UK)

56m

## SIMPLE FOUNDATION - SAVE TIME



Lattice Tower foundation  
( 21 days )



New Pylon foundation using Monopile  
( 6 hours )



## **RISK MANAGEMENT**

Full scale static and dynamic tests

*Prototypes of the T-Pylon, Denmark 2013*







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**SIMPLE INSTALLATION  
TIME SAVING**

**ONE PYLON in  
ONE DAY by  
ONE TEAM**

*Installation of the T-Pylon, Denmark 2013*



## **LONG LIFESPAN - 80 / 100 YEARS**

Using only long-lasting materials

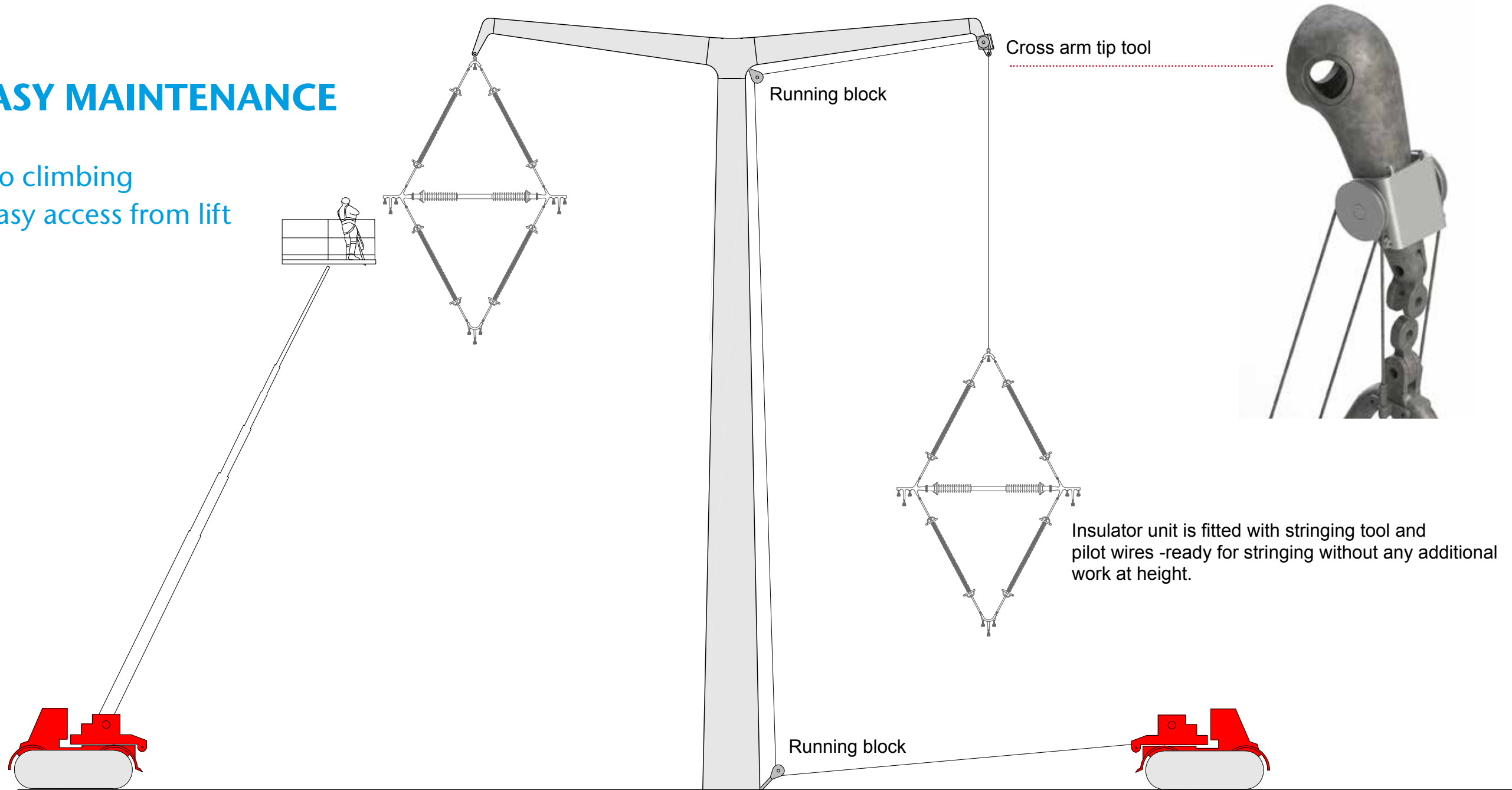


*Prototypes / testing of long lifespan materials*



## EASY MAINTENANCE

- no climbing
- easy access from lift



All terrain vehicle with winch and lift



## EFFICIENT STRINGING

### SAVE TIME

- efficient new tool
- optimised process



*Stringing tool*





## CORONA NOISE REDUCTION BY USING NEW FITTINGS



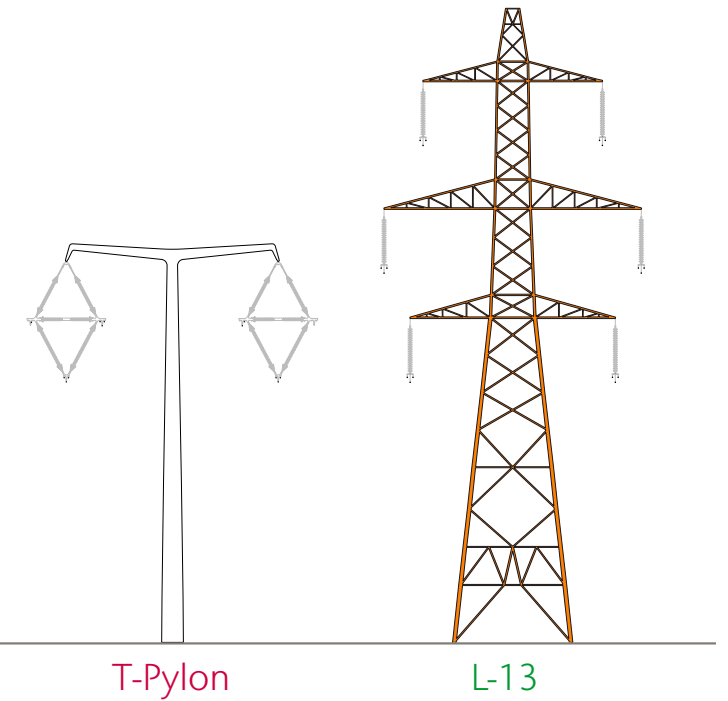
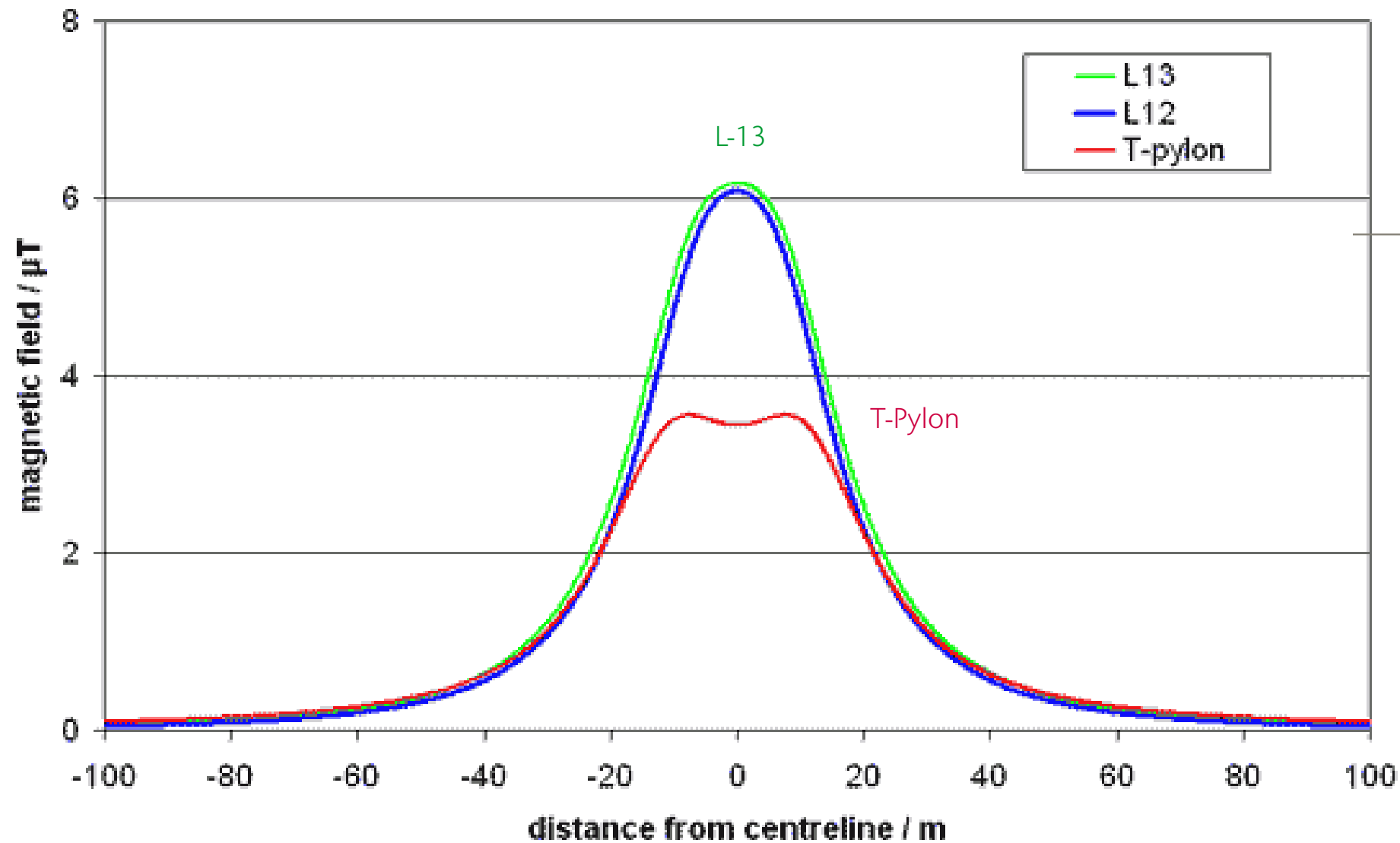
*Full scale electrical test at STRI, Sweden*





# EMF REDUCTION

400 kV overhead line: typical magnetic field





## **EFFICIENT PROCESS**

Testet, documentet project in less than 2 years



*“To see T-Pylon becoming a reality just 20 months after winning the competition, is a fantastic achievement”.*

Edward Davey  
Secretary of State for Energy  
and Climate Change



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Example of how the composite pylon can change the situation remarkably



**BEFORE**

Existing 2x400kV (2 lines)



**AFTER**

Composite Pylon 2X400 kV



## THE TRANSFORMATIONS IS COMING

By using new pylons you will get:

- Public **acceptance**
- **Compact** design
- **Minimal** footprint
- **Low** Weight (Transportable by helicopter)
- **Simple** installation
- **No** additional surface treatment
- **Smaller** Gear, Cranes and Fittings
- **Long** Lifespan

*The Composite Pylon compared to two existing lines (DK)*



**BYSTRUP**

More than **15 years of experience**

**Energized** projects

**International** clients

Operates **all over the world**

**Overcome** public resistance

Provide **peace of mind** for our clients

Supported by The Danish Trade Council.

Selected to participate in the VITUS program for companies with large international growth potential.

Supported by InnovationsFonden - Denmark.

Supported by Denmark's Export Credit Agency, EKF.

