

Resum de Tesi Doctoral



UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH

Escola de Doctorat

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Títol de la tesi	Lleis d'Escala i Complexitat Estructural de les Infraestructures Tecnològiques. Els Sistemes Biològics com a Analogia pel Disseny i Optimització del Transport i Distribució de l'Energia Elèctrica		
Unitat estructural	Institut de Sostenibilitat		
Programa	Sostenibilitat		
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(Mínim 1 i màxim 4, podeu veure els codis a <http://doctorat.upc.edu/gestio-academica/impresos/tesi-matricula-i-diposit/codis-unesco>)

Resum de la tesi de 4000 caràcters màxim (si supera els 4000 es tallarà automàticament)

Within the paradigm of sustainability, this thesis aims to provide complementary views to the conventional engineering in order to put forward tools that facilitate, on the one hand the search of solutions to improve the design of high-voltage power lines, and on the other hand to optimize their networks. As per the improving of a high-voltage line design, Scaling Laws and Gravity Models are used to provide new variables to estimate calculation of the electricity demand of a certain area. This article proposes modifications to the vector diagram of a transmission line operation, known as a Perrine-Baum Diagram to incorporate the new variables proposed with the objective to use this diagram as an application tool in real projects. Regarding the electric power networks, this work applies the analysis tools provided by the theories of Complex Networks to study its topology and spatial features in order to suggest more optimal designs.

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