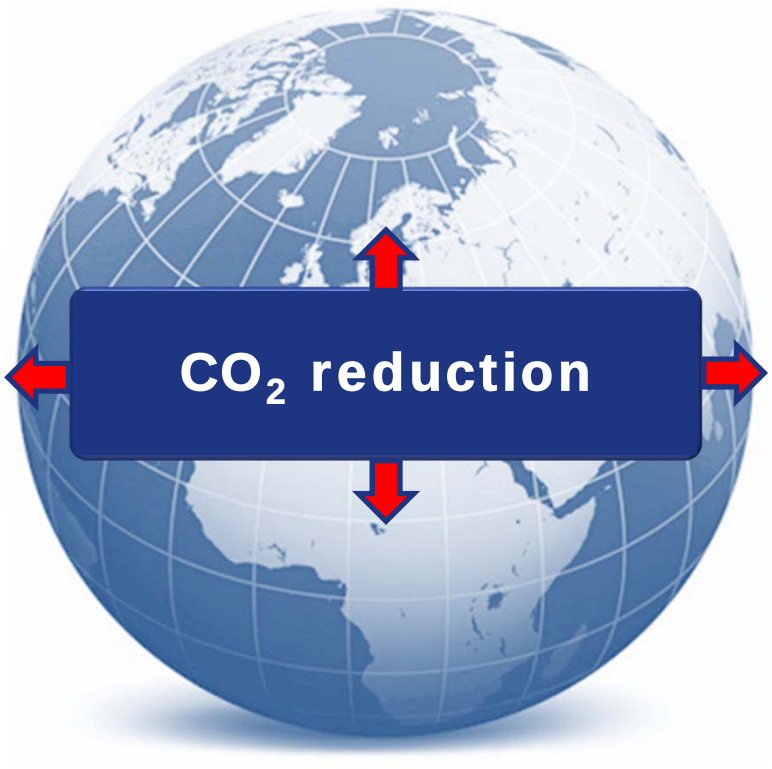
TESMEC

Power lines experience

Tesmec Vision

RENEWABLE SOURCES



Strong Grids

CO_2 reduction

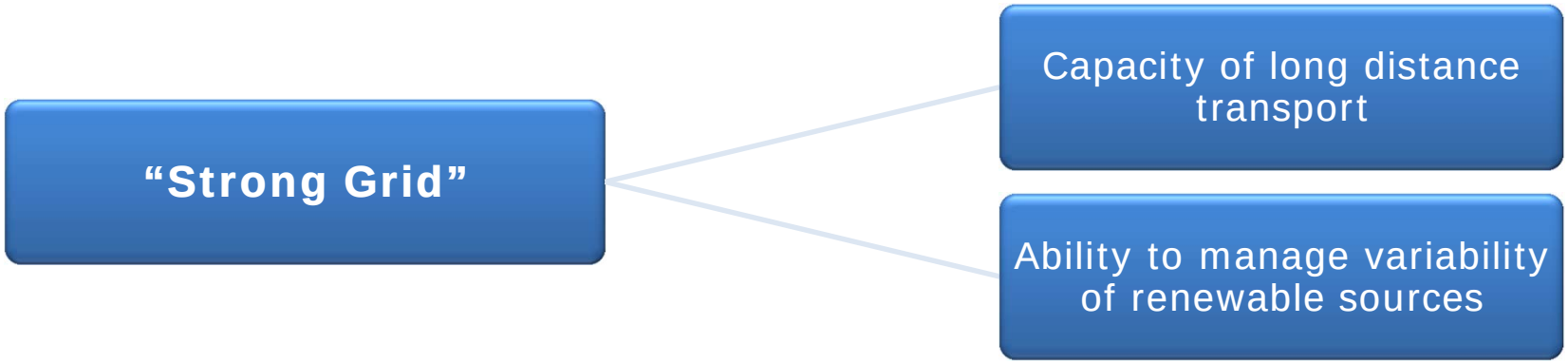
Efficient Grids

POWER LOSSES REDUCTION

Smart Grid must primarily be a Strong Grid

A "Smart Grid" must be primarily a "Strong Grid" for the following reasons:

1. Electricity is not always used in the same place where it is produced → need for transmission and distribution systems on long distance, but they involve significant energy loss → in order to reduce these losses, the recent trend of countries with the higher rate of energy development is to give priority to high voltage power lines (660-750-800-1000 kV, with future growth to 1100-1200 kV), many of which programmed to operate in direct current (DC).
2. Electrical system powered by renewable sources are experiencing a strong development →considerable difficulties in their expansion because of problems arising from delays and lacks of grid interconnection. Renewables → High variability and instability of generation → Existing networks can manage only low levels of variability.



Tesmec solutions

HTLS / Big conductors / UHV DC Lines

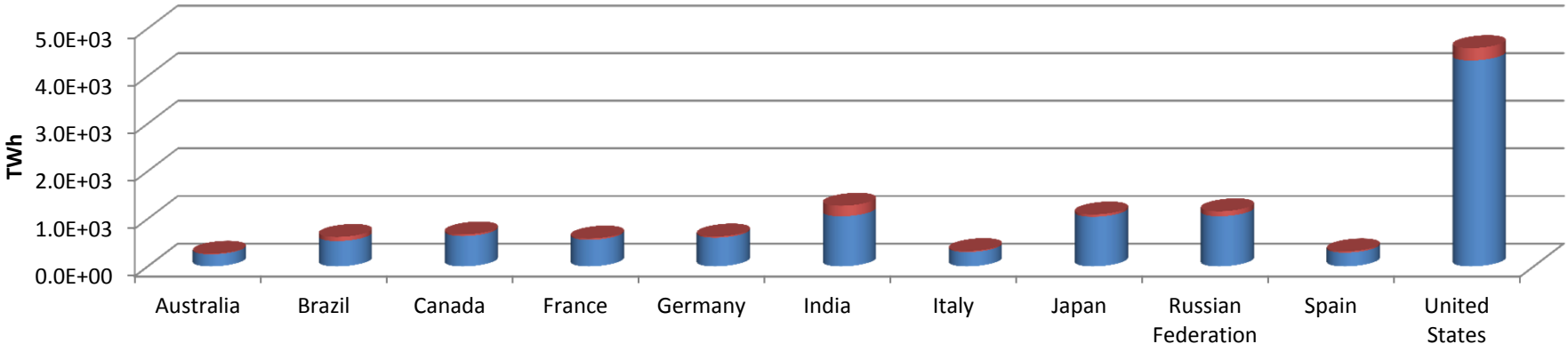
Advanced solutions for new applications

Reconductoring stringing operations

Re-conductoring stringing operations are becoming more frequent and vitally important all around the world, in particular because most of the existing line age is close to the end of safe-live time and because of the new generation of HTLS (High Temperature Low Sag) conductors, that allow to increase the ampacity of an existing line without to modify voltage of the line and structures of the insulators and towers.

Grid efficiency

With the increasing of the power line efficiency through for example the predictive maintenance, the power losses are reduced and the downtime due to the failing of weak points is avoided.



	Australia	Brazil	Canada	France	Germany	India	Italy	Japan	Russian Federation	Spain	United States
Power Losses [TWh]	13,31	87,52	34,70	29,05	25,69	222,41	20,85	48,17	105,00	26,79	259,53
Electricity generation [TWh]	252,57	531,76	636,88	556,89	602,42	1052,33	300,65	1042,74	1053,00	289,05	4326,63

Reference: http://Data.worldbank.org

Reference year: 2011

Line Monitoring System

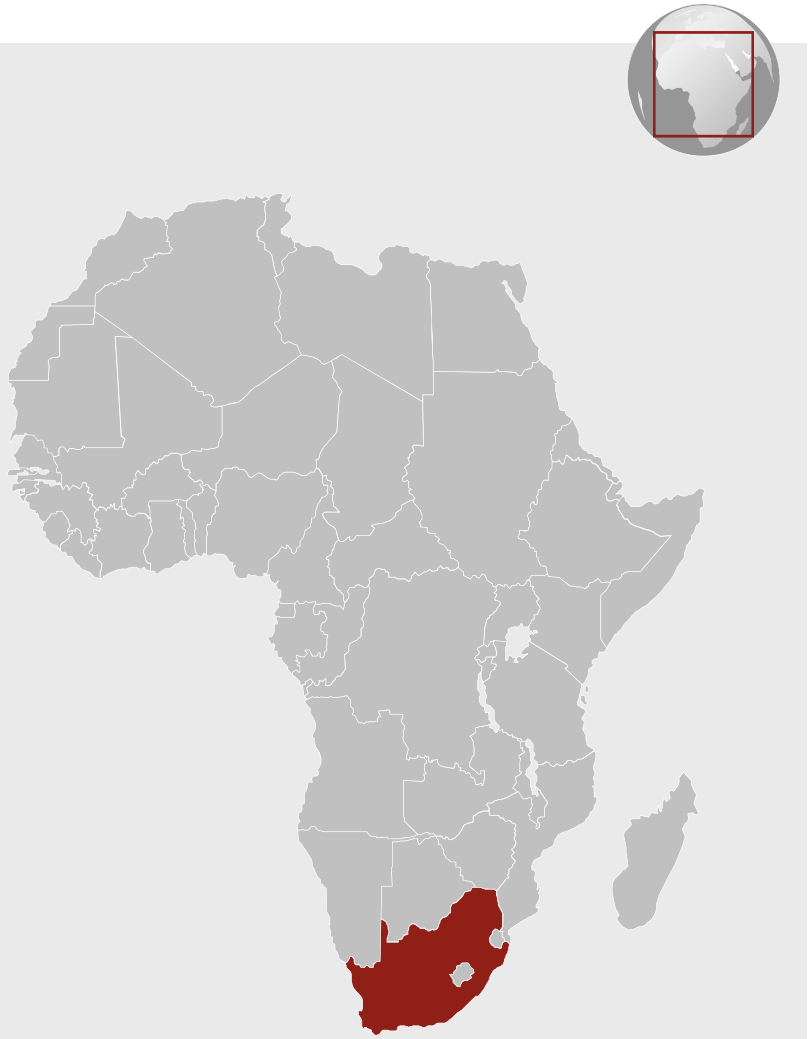
Continuous monitoring of power lines parameters allows to identify critical points which can failure causing unsafely conditions.

- Advanced Products for High Voltage Power Line Communications
- Integrated Tele Protection Systems
- High Voltage Energy Automation, Control & Management
- Innovative System Solutions for Line Capacity Evaluation

765 kV New Line ACSR - South Africa

765 kV new line 6 bundled conductors

- 3000 MW each circuit
- Line Owner: ESKOM (South African Grid)
- Contractor: VISCAS / TOWER TEL OPTIC 1
- N° of conductors per phase: 6
- Conductor section: 430 mm^2
- Length of the line: 215 km (total 1600 km)

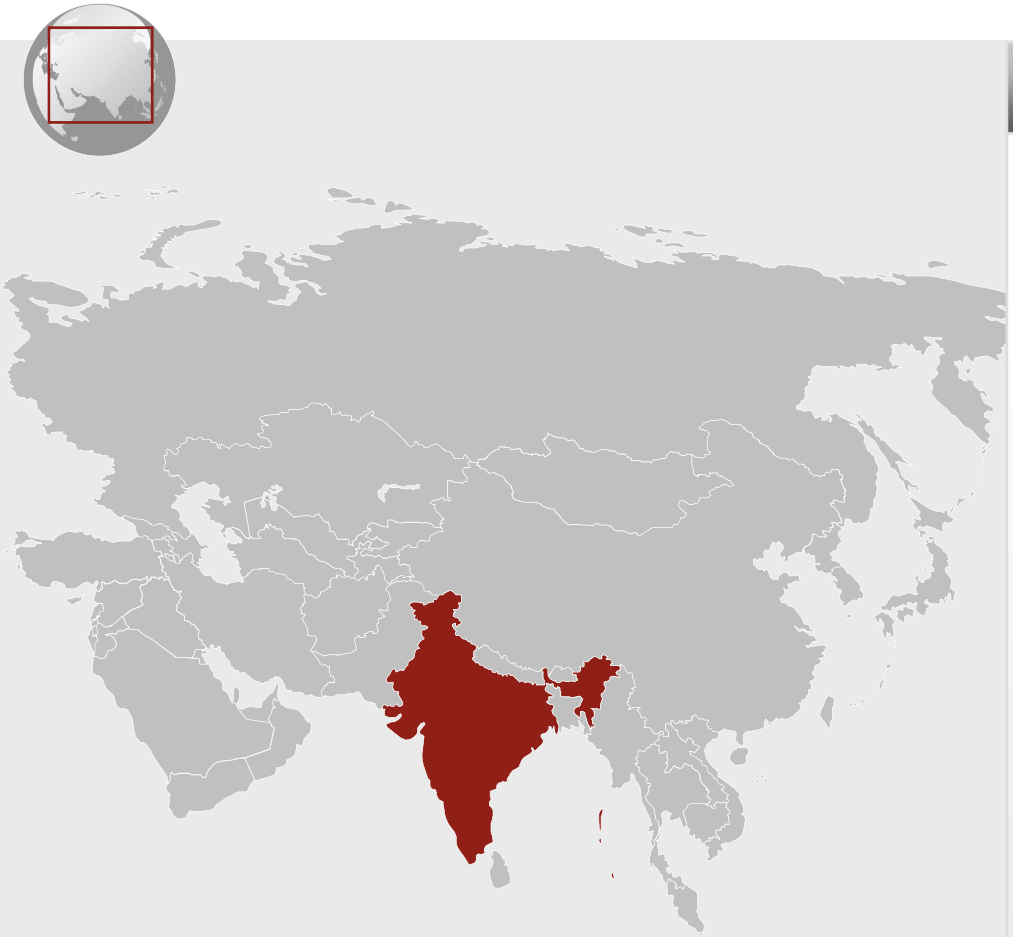


1000 kV New Line ACSR - China

1000 kV new line 6/8 bundled conductors

- 4500 MW each circuit
- Line Owner: State Grid Corporation of China (SGCC)
- Contractor: Various
- N° of conductors per phase: 6/8
- Conductor type:
  LGJ-630/45 ACSR
  (6 bundled conductors)
  LGJ-500/35 ACSR
  (8 bundled conductors)
- Length of the line: total 650 km

765 kV New Line – India



765 KV New line 6 bundled conductors

- 3000 MW each circuit
- Line Owner: India Power Grid
- Contractor: in definition
- N° of conductors per phase: 6
- Conductor diameter: 725 mm^2
- Length of the line: thousands of km

600 kV DC New Line – Brazil

600 KV DC New line

- 4000 MW each circuit
- Line Owner: IE Madeira - Abengoa Elettronor / Elettrosur
- Contractor: Alta Energia - Toshiba - Abengoa - Schahin
- N° of conductors per phase: 4
- Conductor diameter: 44.25 mm
- Length of the line: 2 parallel circuits long 2450 km each

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