YEARS OF RECORDS

Building a brighter future with Engineering and Construction Unit

enel
Green Power

Ten years ago, few people would have bet on such disruptive development in renewable energy. Today, green resources are driving the energy transition, thanks to cheaper but advanced technologies and an increased environmental awareness. In this context, Enel Green Power, born as a bet, a dream, a great challenge, is now a victory, a reality, a challenge that goes on and keeps on being engaging.

According to the IEA, by 2040, global energy demand will rise up to 30% more and renewables play a key role in this rise. In just a few years, clean energy resources have managed to get rid of their old "alternative" label and have come into their own as pioneering resources for a sustainable development, and as such they are destined to dominate the future of the energy market. PV and wind technologies are the "main characters" in this play, along with storage systems that help overcoming the intrinsically intermittence and unpredictability nature of sun and wind. Meanwhile, clean energy costs are becoming more competitive than those of fossil fuels, that is another important factor that confirms the energy transition we are now living. This is the challenge: gradually decarbonize "a world in transformation", with an increasing energy demand.

On our side, Enel Green Power is leading this important transition thanks to its ***people***, who have faced many challenges without ever stopping creating a positive climate or believing in our essential values; such as the great attention we dedicate to the ***health and safety of our workers, sustainability and the innovation of our plants***. The goal is to re-shape the future of energy production, being protagonist of this transition, by placing people and sustainability at the forefront of our attention. This new "humanism" does not exclude anyone from this important change we are experiencing and must be the distinctive drive of our business.

Antonio Cammisecra
CEO of Enel Green Power

Index

Enel Green Power

The energy of today for the world of tomorrow.

We are **present in 29 countries** around the world with **more than 1,200 plants**, including wind, solar, hydroelectric, geothermal and biomass. New information and cutting-edge skills, innovation, desire to improve and passion for what we do are the elements that allow us to produce more than **100 TWh of clean energy** every year for 230 million households, cutting down on ever increasing amounts of CO_2.

Work, effort, professionalism and synergy are and will be our energy for the future

We respect other cultures, populations, and the countries where the plants are built, with a business model aimed at the creation of shared values in which the economic opportunities of the company also answer to social and environmental issues. We are convinced that with our effort we can build a sustainable and environmentally respectful Tomorrow

A world where energy is turned towards the future.

The power of a team, the strength of Engineering & Construction.

We have a managed capacity for an average of **10.8 GW** and a peak of more than **120 projects**, an important figure destined to grow with excellent results according to 2018 estimates, thanks to new efficient procedures and effective technologies which have been put in place with professionalism.
This is a process in which the Engineering and Construction division plays a key role. Every system is developed, from design to final product, with accurate estimated times and costs by way of a detailed plan for every single phase, from its construction all the way through to the delivery to the operating and maintenance units. Thanks to their **know-how**, developed with new technologies and the most avant-garde tools, as well as the expertise acquired on all renewable technologies (geothermal, wind, solar, water and biomass), our team can guarantee the highest professionalism at every stage of the project.

THE PERFECT WAY TO CREATE CLEAN ENERGY

Efficient system, efficient teamwork.

Every installation is realized through sound processes, well-defined hands-on operations, and efficient and avant-garde tools. Each new completed project signals the arrival to an objective, to a successful investment, one of the many achievements that has made our company a leader in the renewable energy field. **2018 ends with 2,840 MW** of additional built capacity, with **125 MW** more in built capacity that's connected to the grid and the storage units. These figures are impressive even if just compared to 2015's, where the same value was only one third of the sum we achieved this year.
A result that came true thanks to the work of the whole E&C team, who commit daily to their work on the plants while facing extreme weather conditions and often unforeseen or out of the ordinary circumstances.
An incredible effort and a sign of great professionalism from this division and from the company as a whole, which goes to show how behind all our successes there is always the same common denominator: the engagement of more than 1,200 people who work with passion to create clean energy every day. Work, commitment, professionalism and synergy are and will be our energy for the future.

The ***construction site*** represents ourselves and our job, our willingness to do, to ***innovate*** and build, in compliance with regulations and safety, by respecting the local communities who live in the territory where the power plant is located. For this reason, everything is designed, managed and analyzed with high precision and accuracy in order to achieve such results, which get to be more and more challenging with each passing year. Our Engineering and Construction team constantly works with passion, high skills and knowledge, prioritizing our values of ***safety***, ***quality and sustainability***.

For the first one, safety, our constant commitment takes shape through many initiatives: from safety agreements, to training, to implementing innovative prevention systems. Quality, always controlled and monitored, is essential to enhance our processes and to become more efficient. Sustainability is the staple of our work, right from the planning to the construction phase of each plant. Sustainable sites turns best practices and innovation into reality, so that our insertion onto the hosting territory during the construction and operation of the plant only has a purely positive impact.

Volumes and yearly additional capacity are rising every year, along with the countries of presence and the complexity of our organization: this is the great challenge we have to face. The consolidated advent of ***Industry 4.0***, through automation and digitalization, is helping our daily job, **BIM** methodologies support not only the design phase but also the construction and the operation and maintenance, in a safer and more sustainable environment.

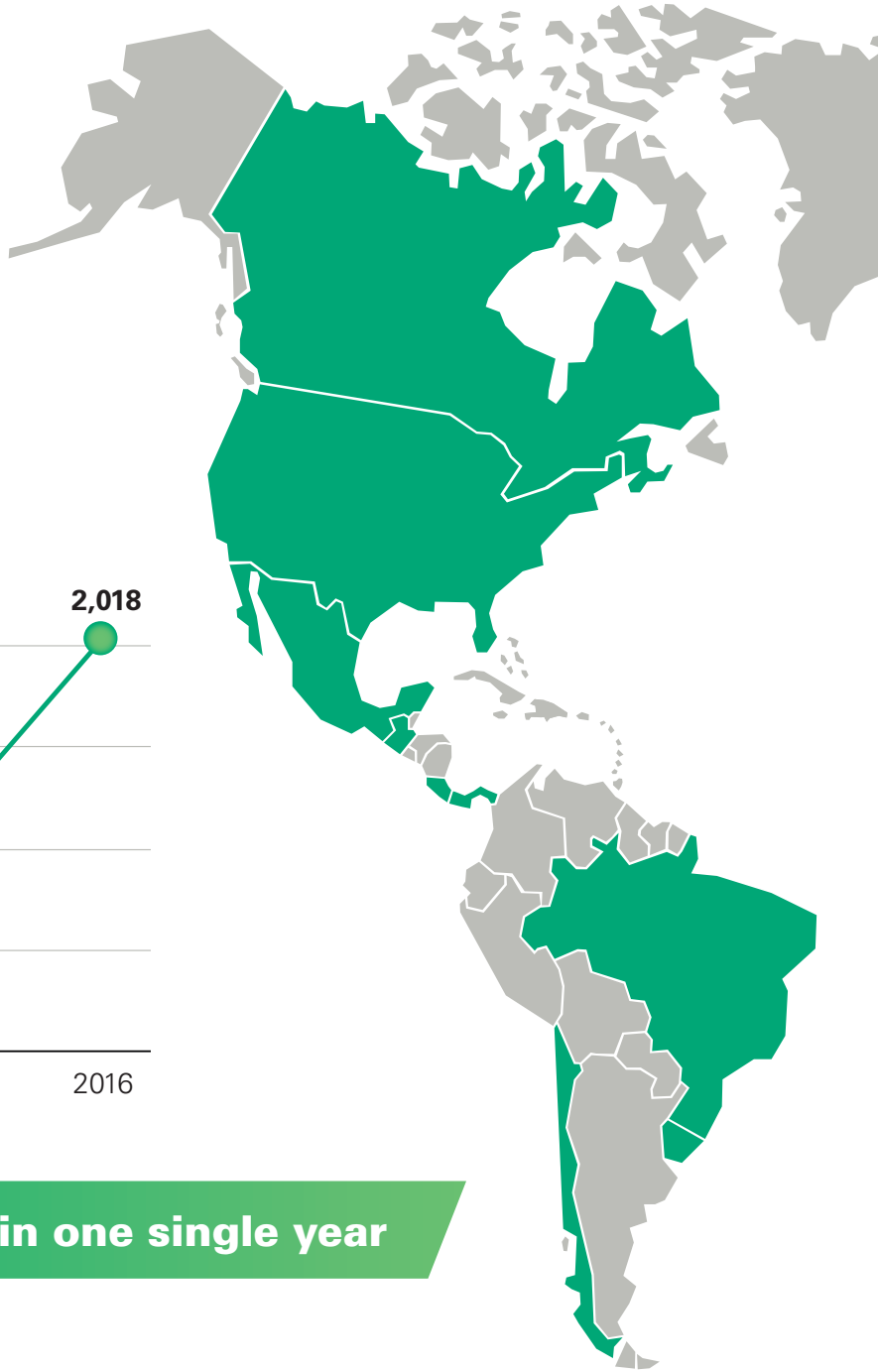
The Engineering and Construction division of Enel Green power is all this: a wide portfolio of six technologies, a continuous synergy of capabilities and passion with more than 1,200 skilled people spread all around the world who work for a ***common goal***.

Umberto Magrini
Head of Engineering and Construction,
Global Renewable Energies

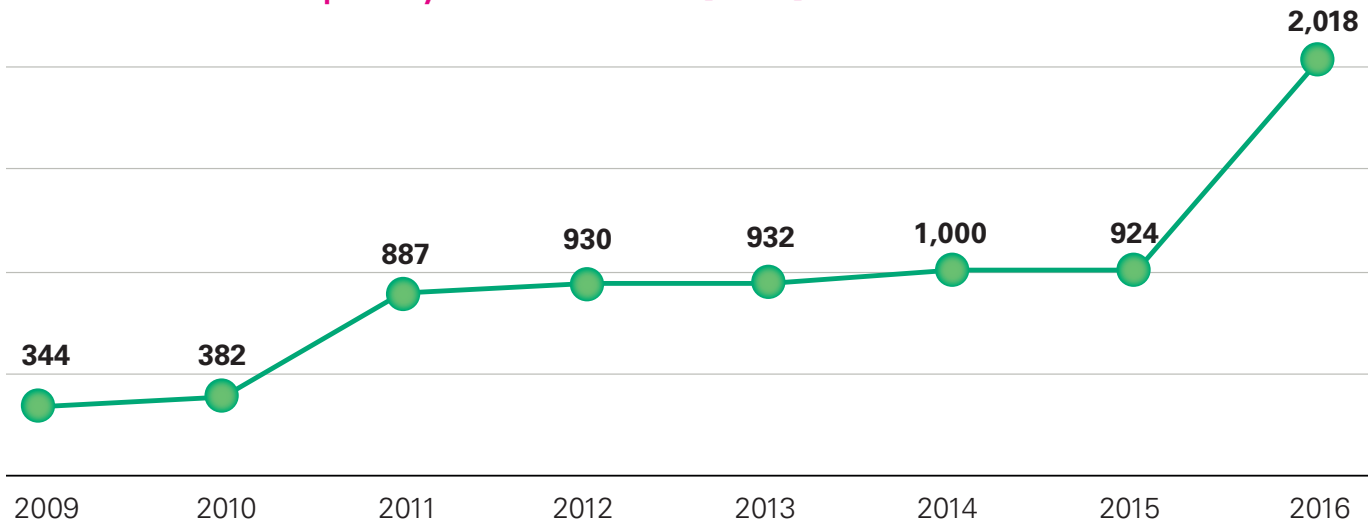
Engineering & Construction **Plants 2016**

Installed capacity up to 2016

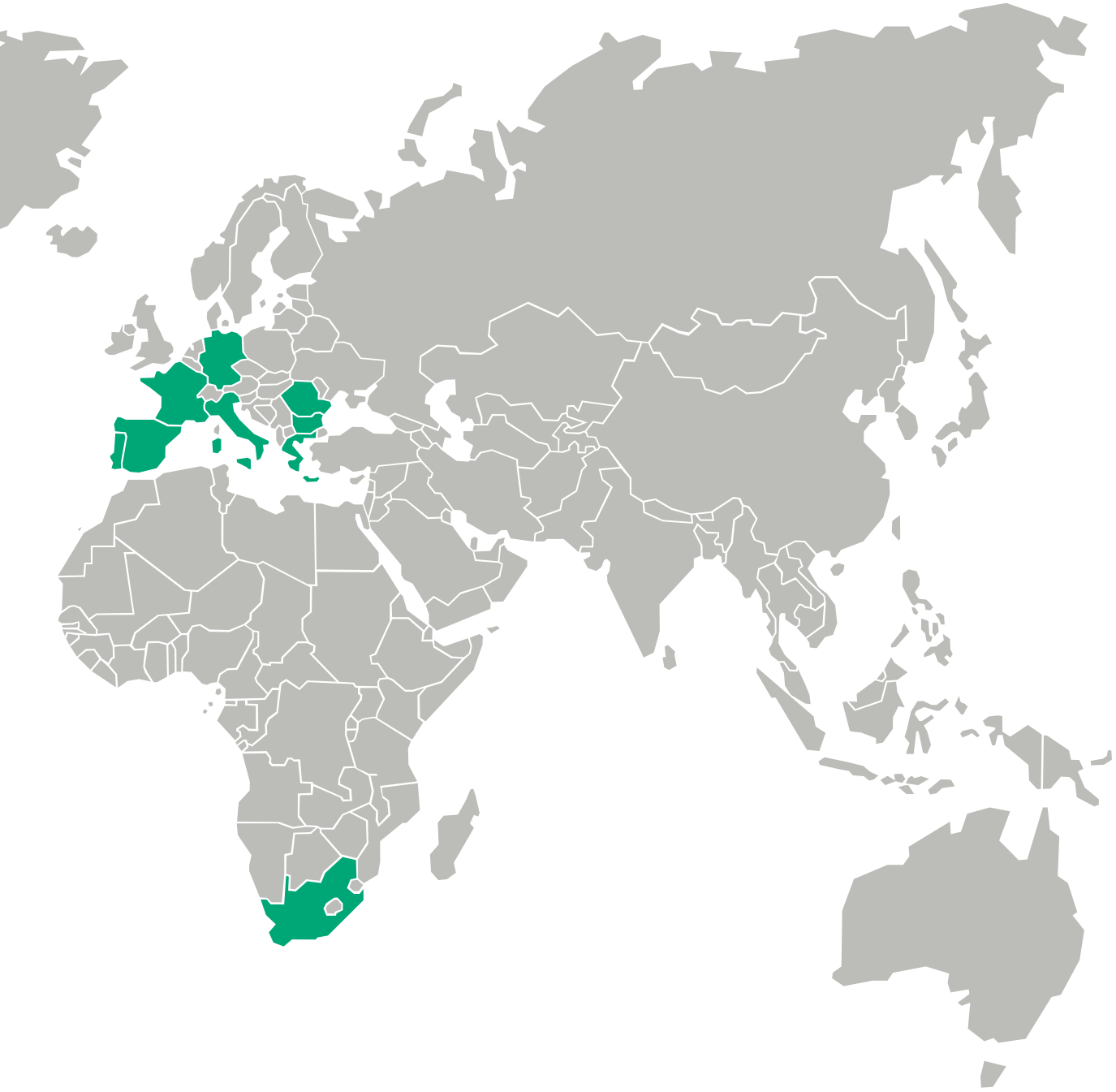
World map



Trend of new capacity installations [GW]



2016: Western world record of 2 GW of capacity built in one single year



TECHNOLOGIES

- WIND
- STORAGE
- SOLAR
- HYDRO
- BIOMASS

291
E&C PROJECTS

7,417 MW
BUILT CAPACITY

18*
COUNTRIES

Main data updated at 2016

* (Italy, Spain, Greece, France, Portugal, Germany, Bulgaria, Romania, Mexico, Guatemala, Panama, Costa Rica, Brazil, Chile, Uruguay, USA, Canada, South Africa).

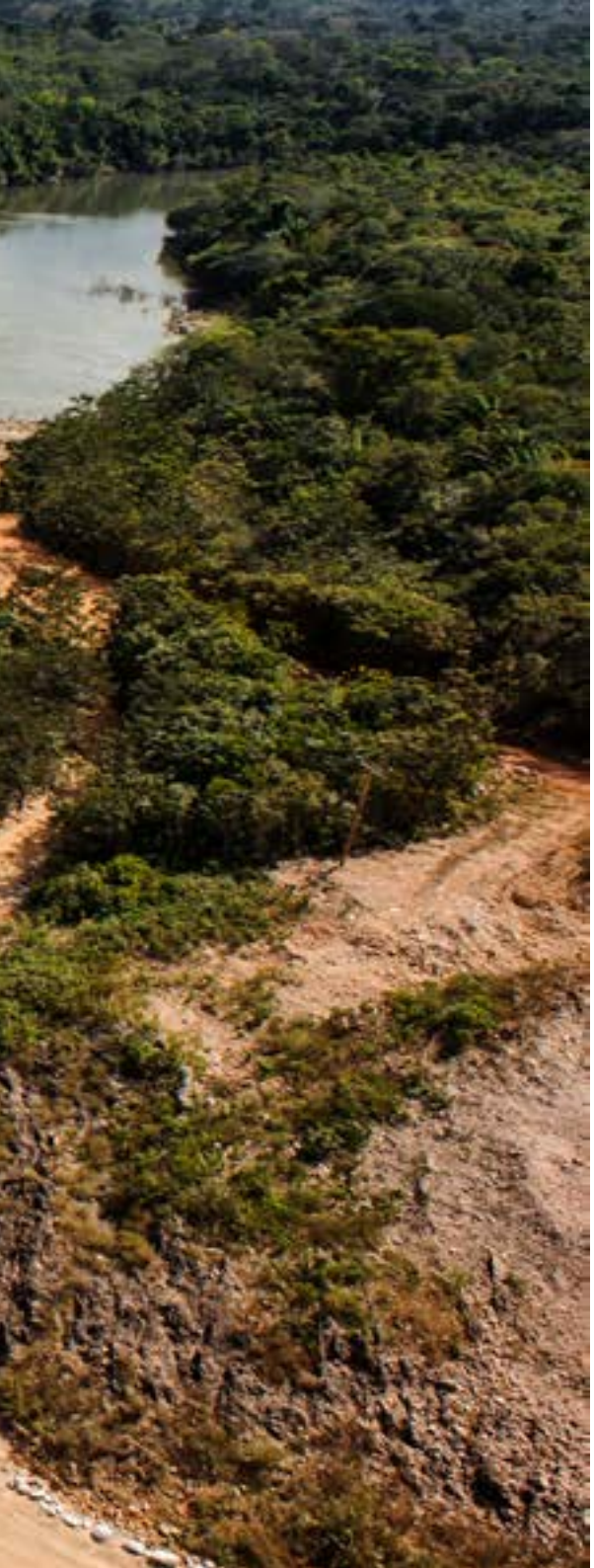
Apiacás

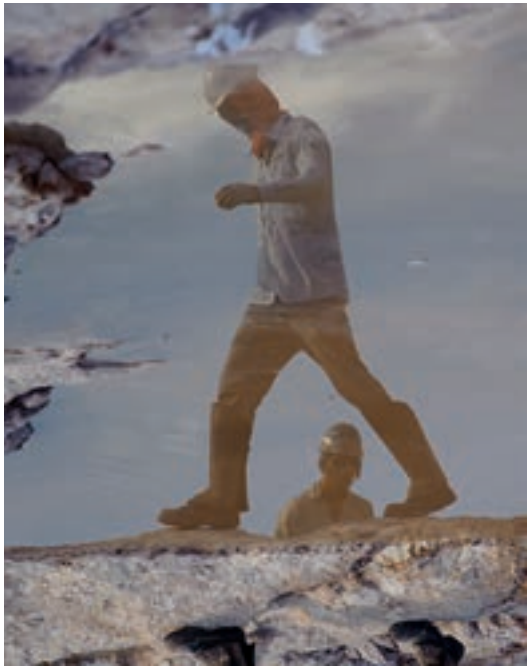
Brazil

Plant information

Technology:	**Hydroelectric**
Capacity:	**102 MW**
Location:	**Brazil – Mato Grosso**
COD:	**April, 2016**
Turbine technology:	**Kaplan “S” montante - 15 MW**


“The green heart of the planet
pulsates with clean energy.”





Cimarron Bend

USA


Follow the horizon to see the future.


KANSAS
SAFETY


A land right at the center of the wind’s path.

Plant information

Technology:	**Wind**
Capacity:	**200 MW (of 400 MW total capacity)**
Location:	**Clark County, Kansas (USA)**
Type of turbines:	**Vestas 2.0 MW, 110 m Rotor Diameter, 80 m Hub Height**

More than 350 people working together to build the largest wind farm in the world.

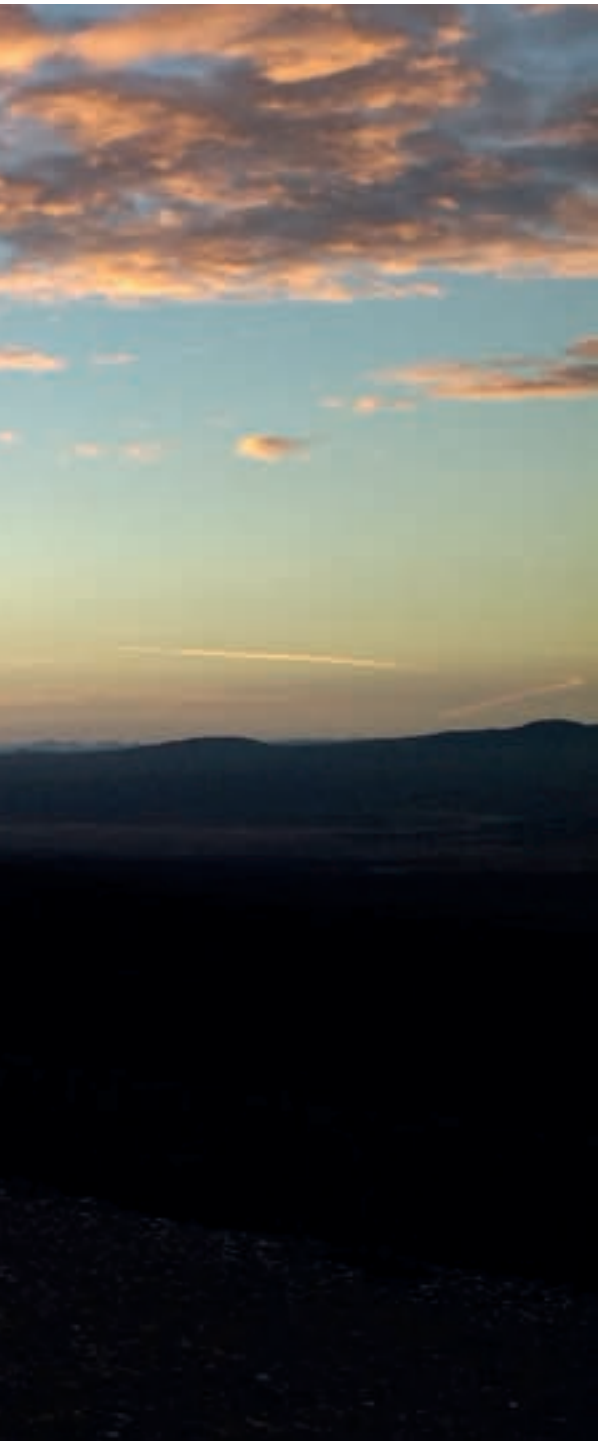
Palo Alto

Mexico

Plant information

Technology:	**Wind**
Capacity:	**129 MW**
Location:	**Ojuelos y Lagos de Moreno, Jalisco – Mexico**
Type of Turbine:	**Acciona AW125/3000 of 3MW at 87.5 Hub Height**

A never-ending land crossed
by a never-ending source of energy.




VOLVO

Drift Sand

USA

Plant information

Technology:	**Wind**
Capacity:	**108 MW**
Location:	**Grady County, Oklahoma – USA**
Type of Turbine:	**Vestas 2.0 MW – 100 m rotor diameter – 80m hub high at 87.5 m Hub Height**

480 million KWh of wind power produced each year.

Pampa Norte

Chile


The energy of the future,
born from the sun of the Pampas.

Information

Technology:	**Solar**
Capacity:	**79.25 MW**
Location:	**Antofagasta, Región de Antofagasta – Chile**
Type of PV Panels:	**Polycrystalline Silicon**


258,000 modules
of Polycrystalline silicon
producing **200 GWh every year.**

Vientos del Altiplano

Mexico

Plant information

Technology:	**Wind**
Capacity:	**100 MW**
Location:	**Mahoma, Zacatecas – Mexico**
Type of turbine:	**Gamesa G114 – 2.0 MW at 93 m Hub Height**

Thanks to these **50 wind turbines**,
every year 157,000 tons of CO_2
don't pollute the atmosphere.

Finale Emilia

Italy

Plant information

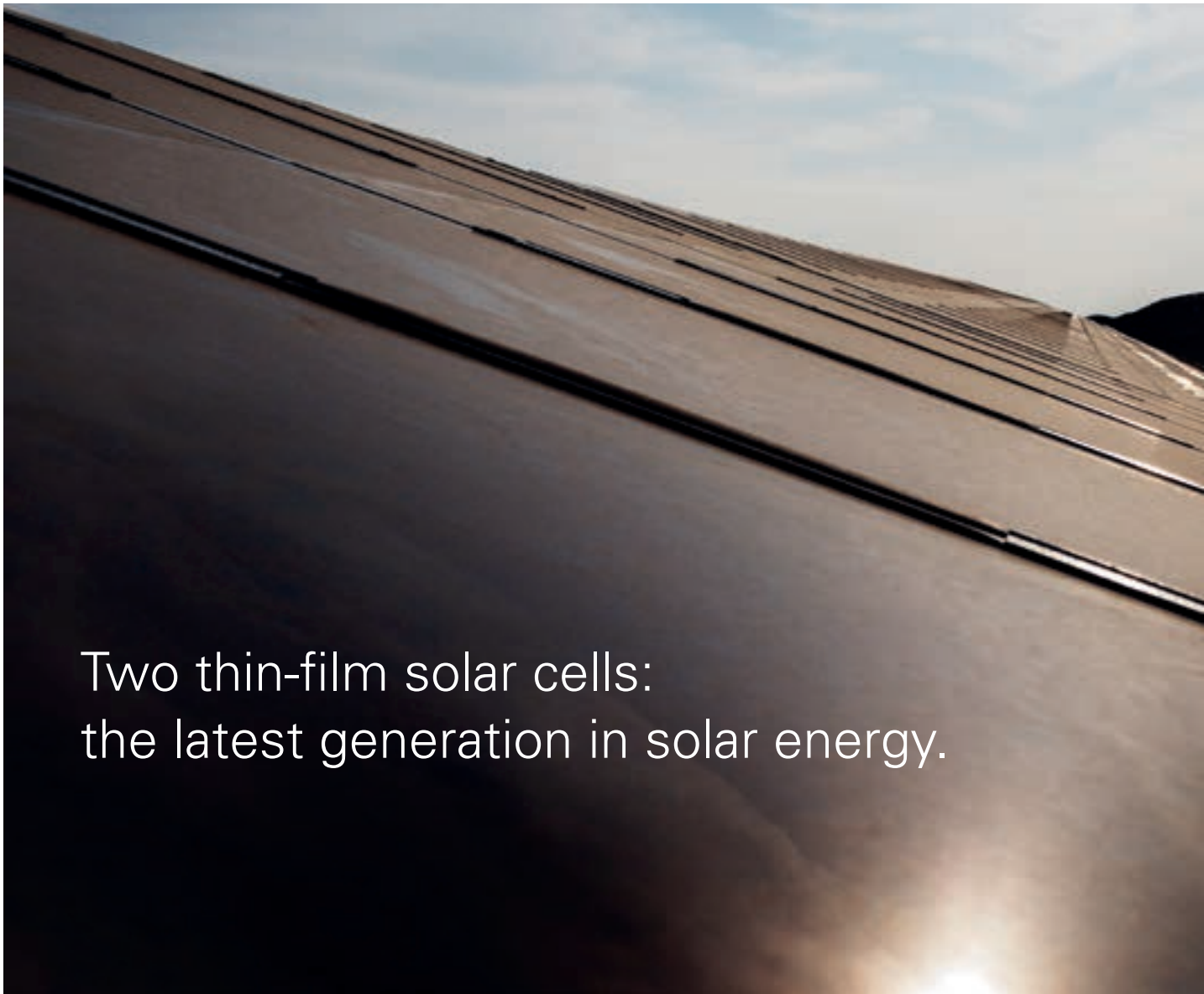
Technology:	**Biomass**
Capacity:	**15 MW**
Location:	**Italy – Emilia**
Thermal Capacity:	**50 MWh**
Type of combustion:	**Combustion on grid with water/steam cycle**

Pulida

South Africa

Plant information

Technology:	**Solar**
Capacity:	**82.5 MW**
Location:	**South Africa – Free State, Latsemeng Municipality**
Type PV Panels:	**3 Thin Film solar cells**



159 GWh produced each year
for the energy needs of 50,000 households.

Finis Terrae

Chile

Plant information

Technology:	**Solar**
Capacity:	**160 MW**
Location:	**Maria Elena, Región de Antofagasta – Chile**
Type PV Panels:	**Crystalline**

Nojoli

South Africa

Plant information

Technology:	**Wind**
Capacity:	**88 MW**
Location:	**Cookhouse-Bedford, EC – South Africa**
Turbine Technology:	**V 100, 2 MW – 100 m rotor diameter – 80m hub high**

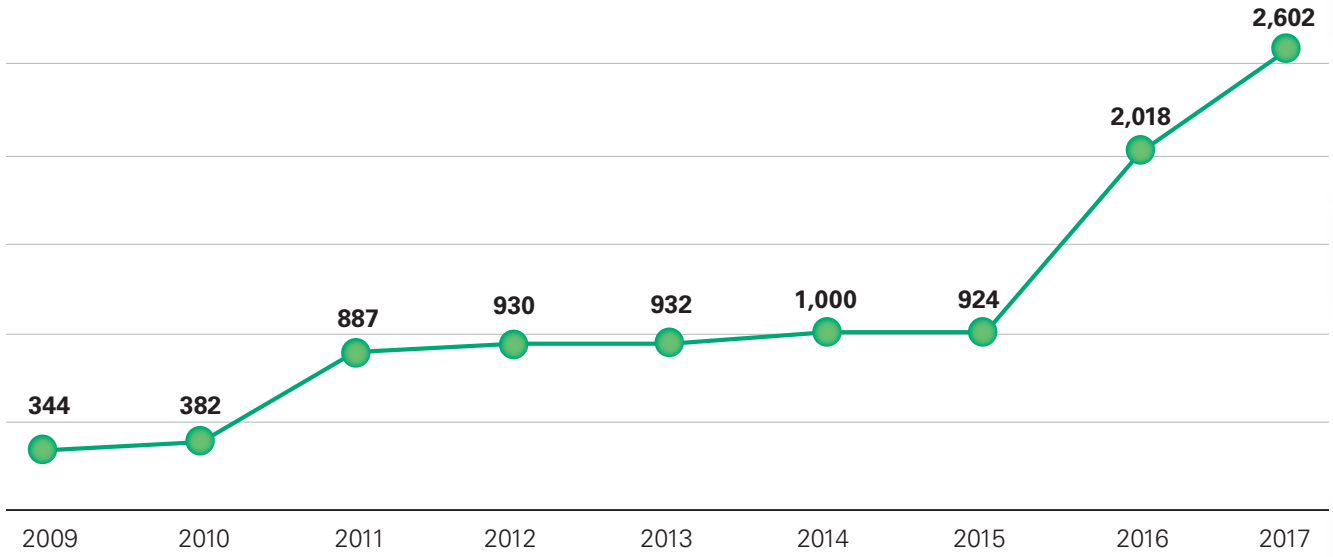
Engineering & Construction

Plants built and under construction 2017

2017: on the way of 3 GW

In 2017 we confirmed the work done in previous years, building new plants and investing in new projects aimed at innovation and sustainability.
These goals will also remain at the forefront for 2018.

Trend of new capacity installations [MW]

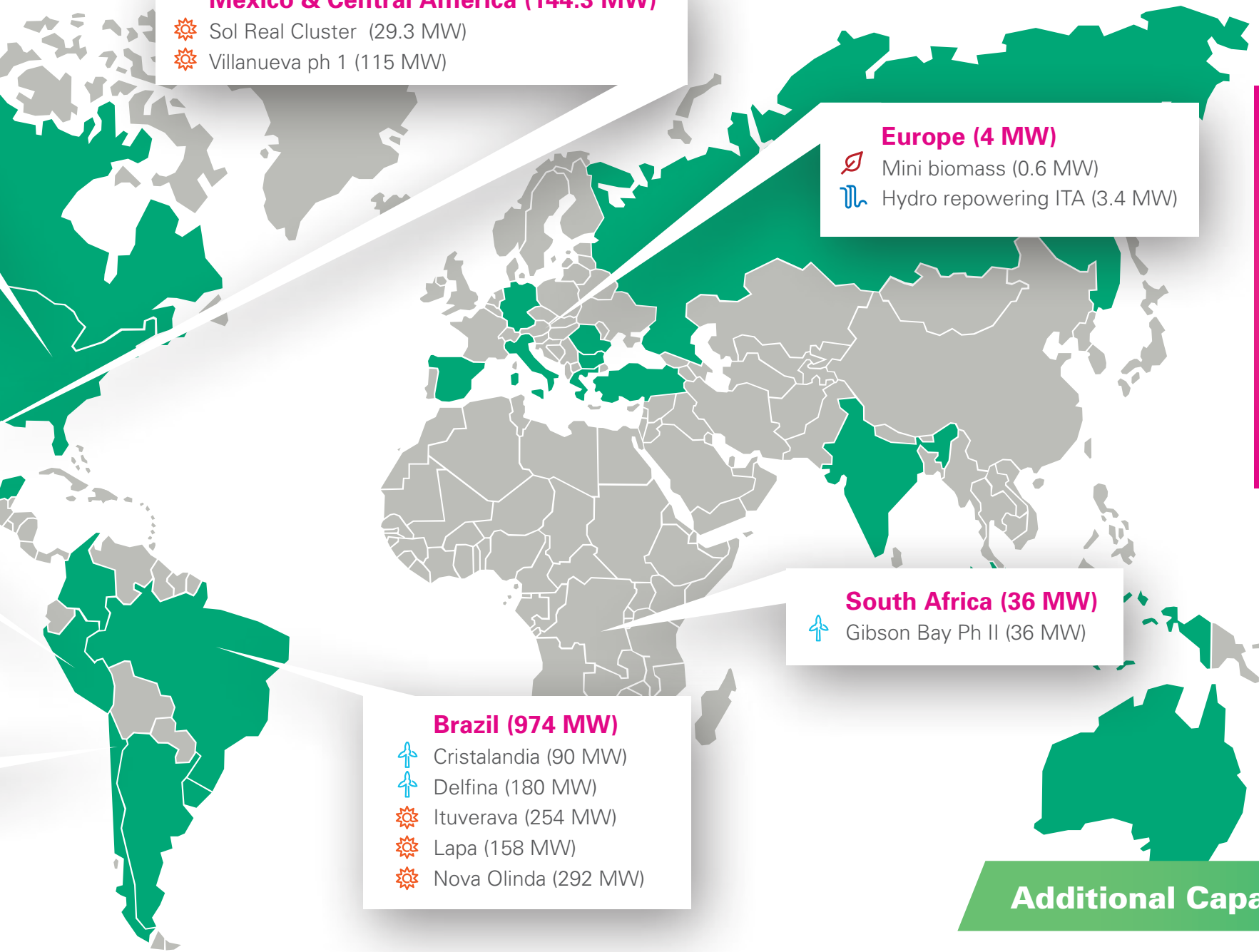


USA (1,223 MW)
- Aurora Ph. II (31 MW)
- Lindahl Ph. II (70 MW)
- Rock Creek (300 MW)
- Thunder Ranch (298 MW)
- Cimarron Bend Ph. II (200 MW)
- Red Dirt (299.3 MW)
- Woods Hill (24.5 MW)

Peru (179.5 MW)
- Rubi (179.5 MW)

Chile (41 MW)
- Cerro Pabellón (41 MW)

TECHNOLOGIES WIND SOLAR STORAGE GEOTHERMAL HYDRO



Mexico & Central America (144.3 MW)

- Sol Real Cluster (29.3 MW)
- Villanueva ph 1 (115 MW)

Europe (4 MW)

- Mini biomass (0.6 MW)
- Hydro repowering ITA (3.4 MW)

South Africa (36 MW)

- Gibson Bay Ph II (36 MW)

Brazil (974 MW)

- Cristalandia (90 MW)
- Delfina (180 MW)
- Ituverava (254 MW)
- Lapa (158 MW)
- Nova Olinda (292 MW)

316
E&C PROJECTS

10,019 MW
BUILT CAPACITY

19*
COUNTRIES

Main data updated at 2017

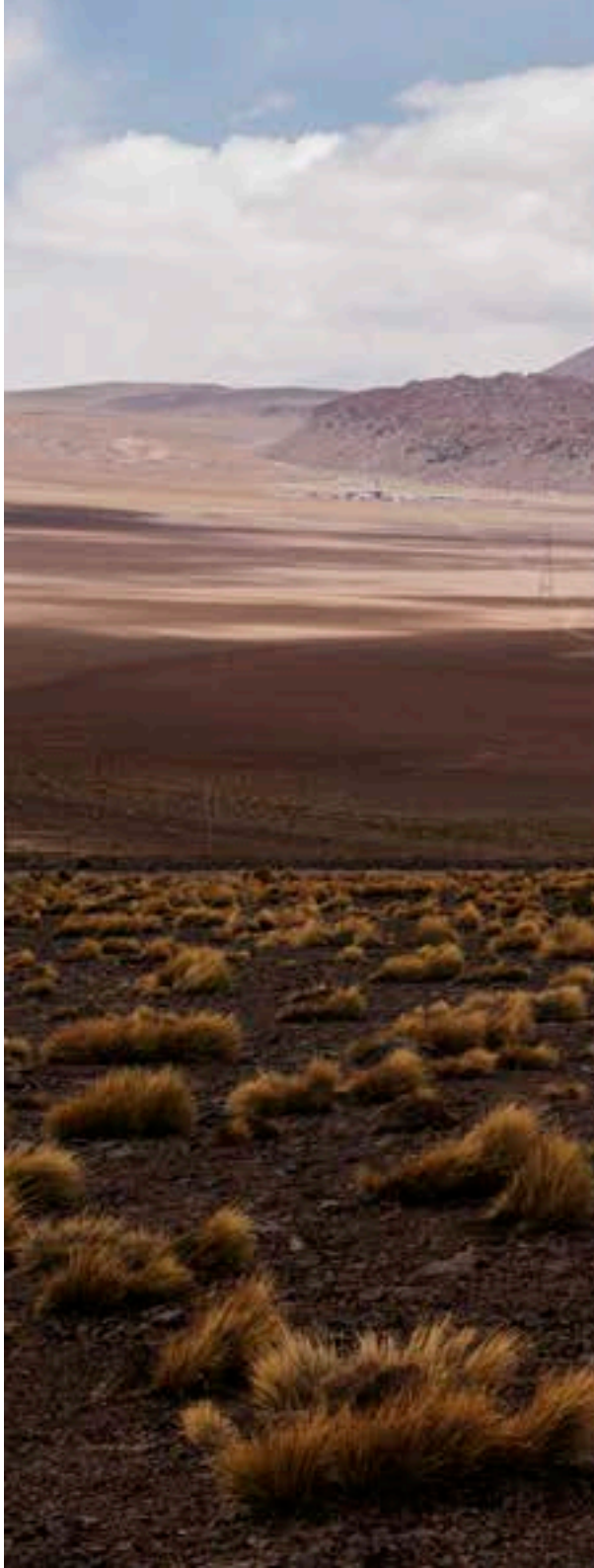
* (Italy, Spain, Greece, France, Portugal, Germany, Bulgaria, Romania, Mexico, Guatemala, Panama, Costa Rica, Brazil, Peru, Chile, Uruguay, USA, Canada, South Africa)

Additional Capacity: 2,602 MW

Cerro Pabellón

Chile

The challenge to see the future as if it was the present.



Plant information

Technology:	**Geothermal**
Capacity:	**48 MW**
Location:	**Ollagüe, Region Antofagasta – Chile**
Type of cycle:	**binary**
Production Wells (quantity):	**6**
Injection Wells (quantity):	**5**


Vision, innovation, technology, people.
The necessary elements to achieve a collective dream.

Rock Creek

USA

Plant information

Technology:	**Wind**
Capacity:	**300 MW**
Location:	**USA – Atchison County, Missouri**
Type of Turbine:	**Vestas V110 – 2.0 MW – Hub Height 95m**

Nova Olinda

Brazil

Plant information

Technology:	**Solar**
Capacity:	**292 MW**
Location:	**Brazil – São João do Piauí (Piauí)**
Type of PV Panels:	**Jinko JKM 315PP-72**

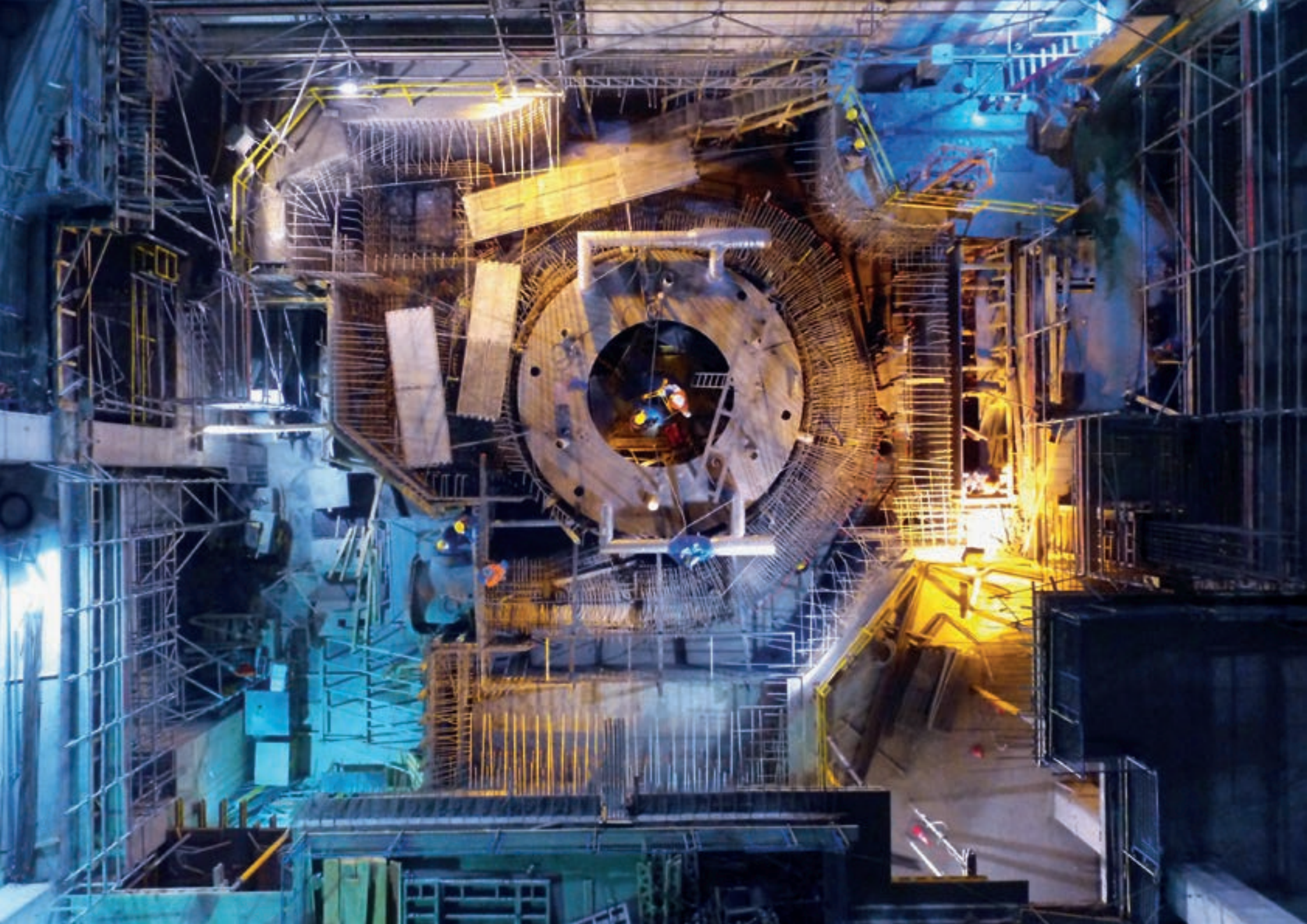
The power and passion of a team to capture the energy of water.

Los Cóndores

Chile

Plant information

Technology:	**Hydroelectric**
Capacity:	**150 MW**
Location:	**Chile – Talca**
Technology:	**2 Pelton units, vertical axis, with underground powerhouse**



Villanueva

Mexico

2,400,000 panels to harvest
the energy that falls on the desert.

Plant information

Technology:	**Solar**
Capacity:	**754 MW (Villanueva 1 - 427 MW; Villanueva 3 - 327 MW)**
Location:	**Viesca, Coahuila – Mexico**
Type of PV Panels:	**Jinko Polycristaline Modules 320 W**

Ituverava

Brazil

An area equal to 660 soccer fields dedicated to the sun.

Plant information

Technology:	**Solar**
Capacity:	**254 MW**
Location:	**Tabocas do Brejo Velho - Bahia**
Type of PV Panels:	**JA Solar mod. JAP6 72-315/3BB and JAP6 72-320/3BB**

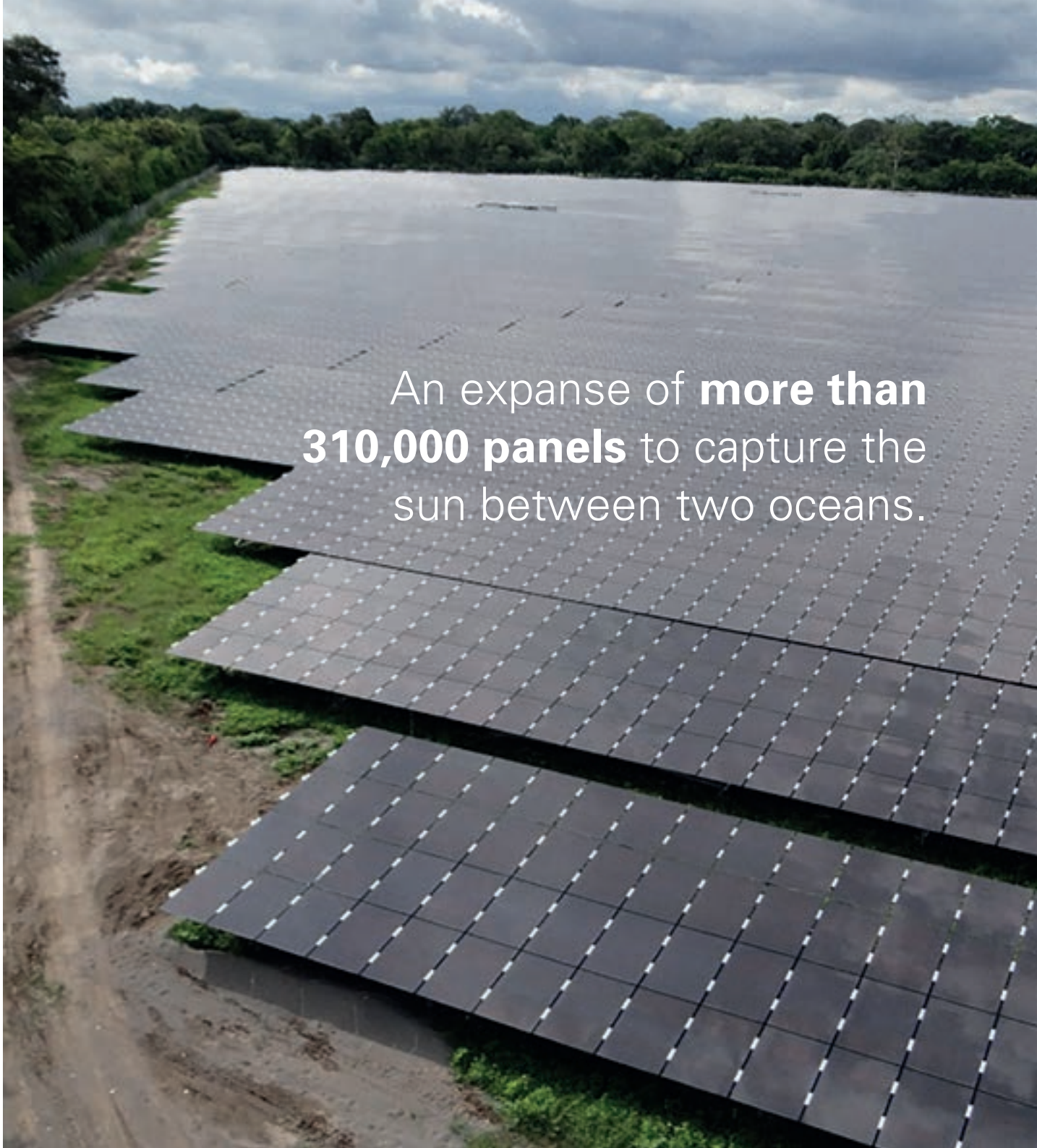
11,676 solar panels installed in just one day: a record achieved through team effort.

Sol Real

Panama

Plant information

Technology:	**Solar**
Capacity:	**42 MW**
	(Caldera Solar 5 MW; Sol de David 8 MW; Sol Real 11 MW; Milton Solar 10 MW; Vista Alegre 8 MW)
Location:	**Coclé and Chiriquí - Panama**
Type of PV Panels:	**3Sun thin film**



An expanse of **more than 310,000 panels** to capture the sun between two oceans.

Lapa

Brazil

Plant information

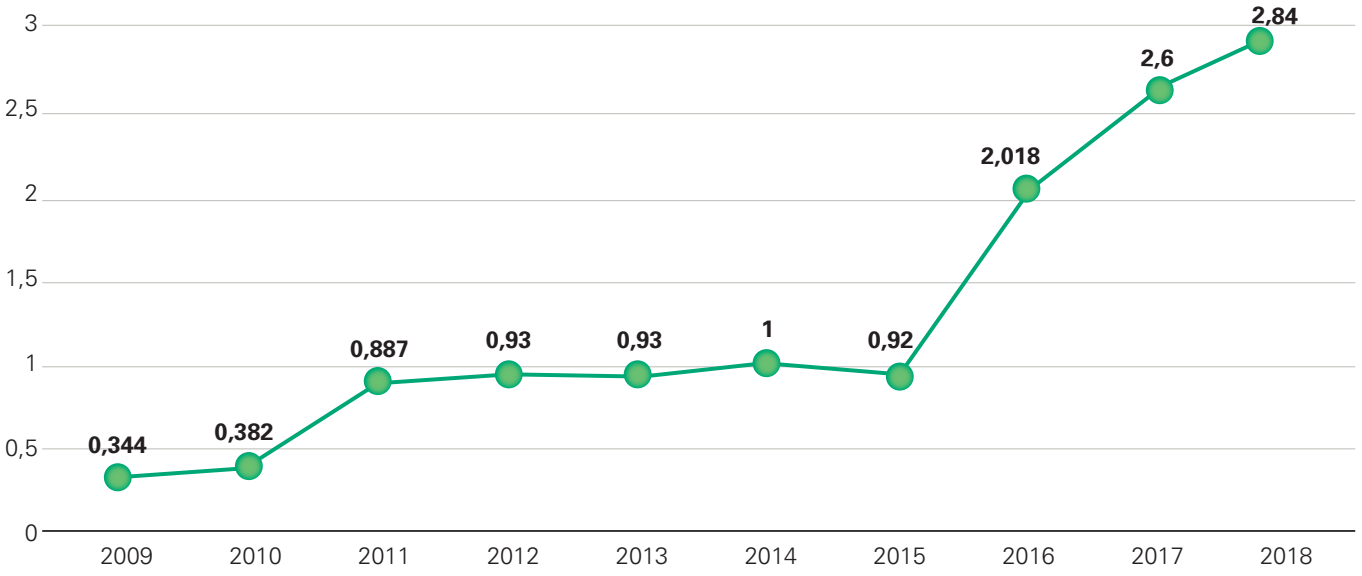
Technology:	**Solar**
Capacity:	**158 MW (Bom Jesus da Lapa I & II - 80 MW; Lapa II and III - 78 MW)**
Location:	**Bom Jesus da Lapa Municipality – State of Bahia, Brazil.**
Type of PV Panels:	**Jinko JKM 315PP-72**

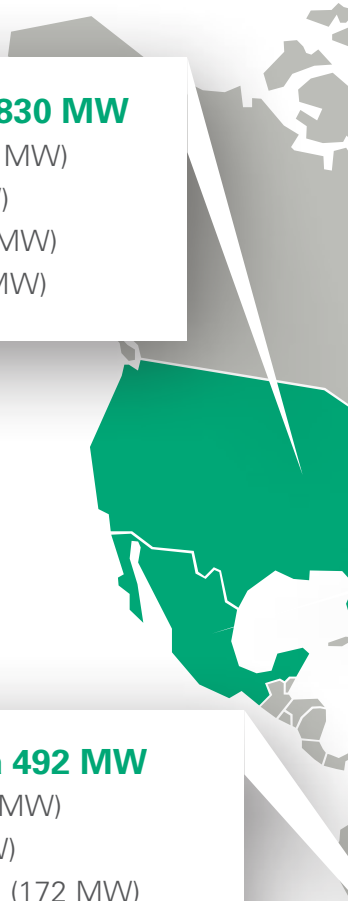
Engineering & Construction

Plants built and under construction 2018

2018: preparing 4+ GW

Trend of new capacity installations





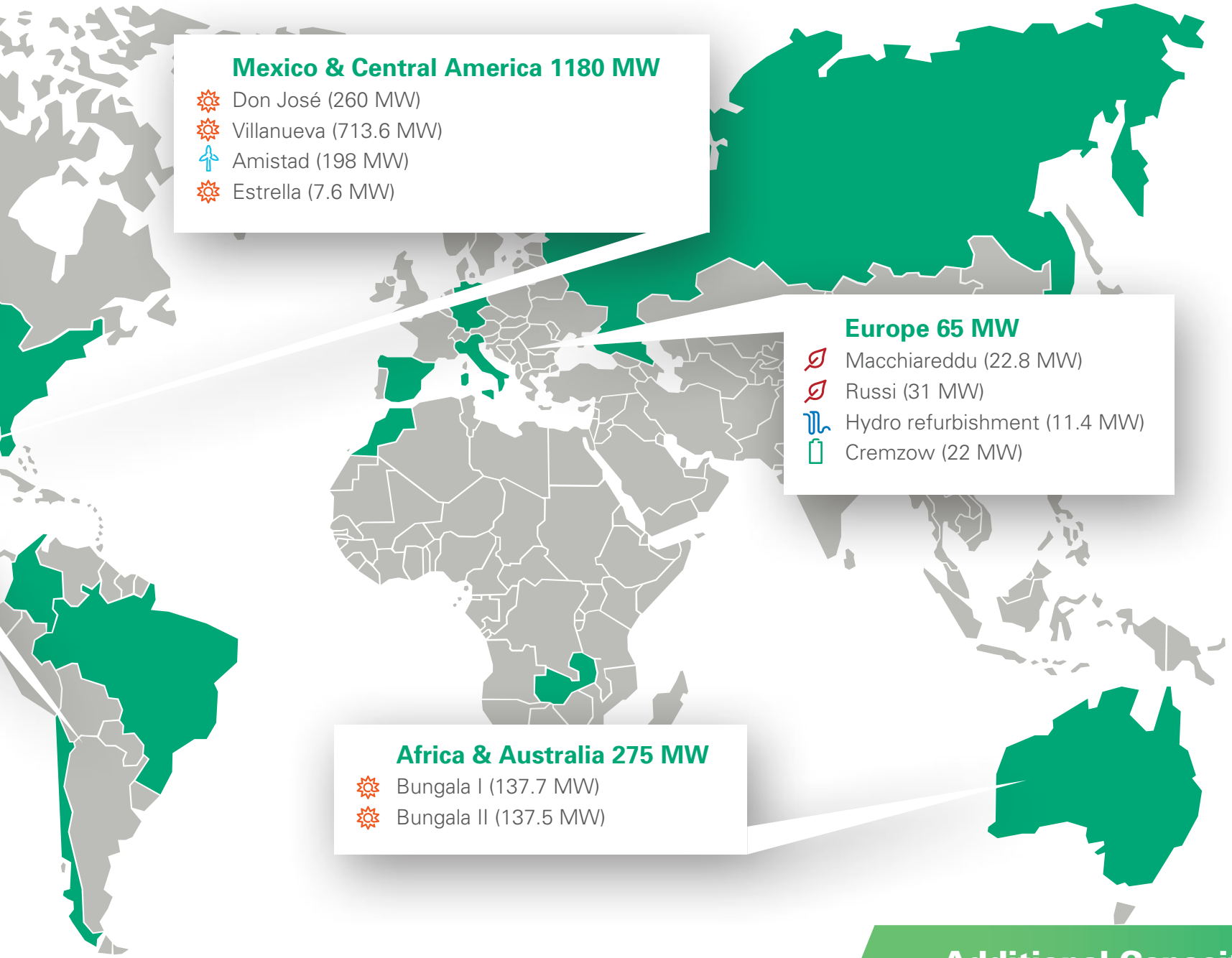
North America 830 MW

- Diamond Vista (300 MW)
- HillTopper (185 MW)
- Rattlesnake (318.2 MW)
- Still Water II (27.1 MW)

Latin America 492 MW

- Horizonte (103.4 MW)
- El Paso (83.5 MW)
- Morro do Chapéu (172 MW)
- Wayra (132,3 MW)
- Hydro refurbishment (0.7 MW)

TECHNOLOGIES WIND SOLAR BIOMASS STORAGE HYDRO



Mexico & Central America 1180 MW

- Don José (260 MW)
- Villanueva (713.6 MW)
- Amistad (198 MW)
- Estrella (7.6 MW)

Europe 65 MW

- Macchiareddu (22.8 MW)
- Russi (31 MW)
- Hydro refurbishment (11.4 MW)
- Cremzow (22 MW)

Africa & Australia 275 MW

- Bungala I (137.7 MW)
- Bungala II (137.5 MW)

341
E&C PROJECTS

12,860 MW
BUILT CAPACITY

21*
COUNTRIES

* Italy, Spain, Greece, France, Portugal, Germany, Bulgaria, Romania, Mexico, Guatemala, Panama, Costa Rica, Brazil, Peru, Chile, Uruguay, USA, Canada, South Africa, Colombia, Australia

Additional Capacity: 2,841 MW

Amistad

México

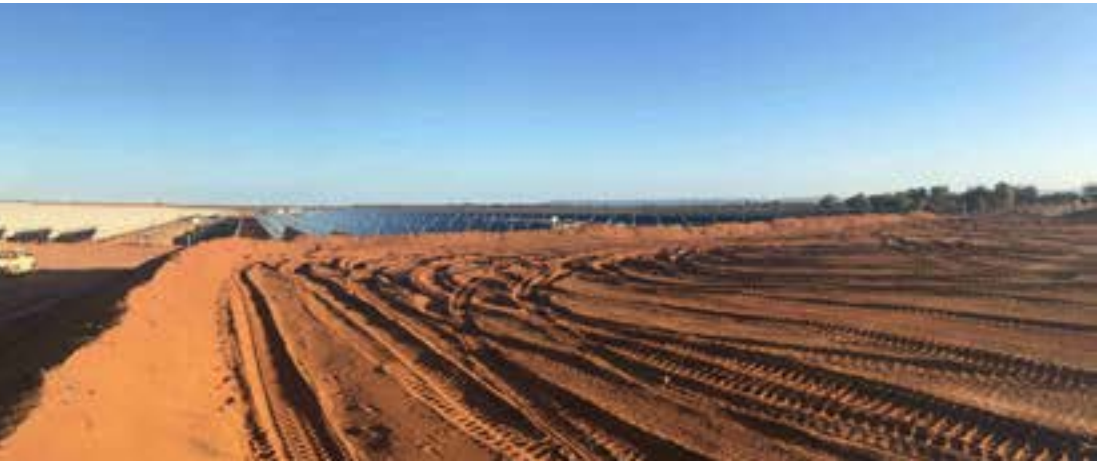
Plant information

Technology:	**Wind**
Capacity:	**198 MW**
Location:	**Ciudad Acuña, Coahuila - México**
Type of Turbine:	**GAMESA 3.5 MW, rotor diameter 132 m, hub height 84 m**

Bungala I & II

Australia

Enel Green Power’s solar power reached Australia
with the biggest plant of the country



Plant information - Bungala I

Technology:	**Solar**
Capacity:	**138 MW**
Location:	**Port Augusta, South Australia - Australia**
Type of PV module:	**Jinko Polycrystalline Solar Modules (325 and 330 W)**

Plant information
Bungala II

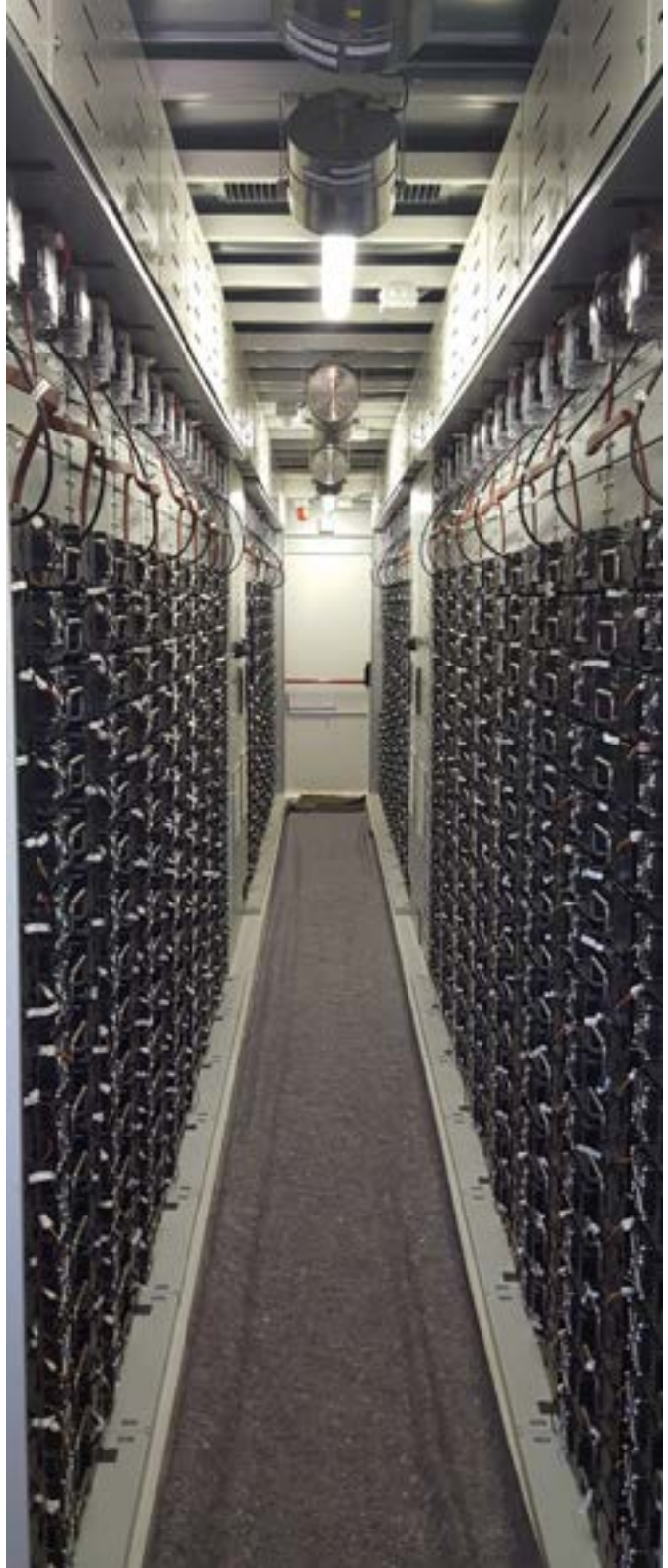
Technology:	**Solar**
Capacity:	**138 MW**
Location:	**Port Augusta, South Australia - Australia**
Type of PV module:	**Jinko Monocrystalline Solar Modules (330 and 335 W)**

Cremzow Bess

Germany

Plant information

Technology:	**Storage**
Capacity:	**22MW / 34MWh**
Location:	**Carmzow, Germany**
Type of Battery:	**LG-Chem NMC Li-ion battery**



Diamond Vista

USA

Plant information

Technology:	**Wind**
Capacity:	**300 MW**
Location:	**Marion and Dickinson counties, Kansas - USA**
Type of turbine:	**Nordex-Acciona 3.15 MW, rotor diameter 125 m, hub height 87.5 m**


MLC300

Don José

México

Plant information

Technology:	**Solar**
Capacity:	**260 MW**
Location:	**San Luis de la Paz, Guanajuato - México**
Type of PV module:	**Jinko Polycrystalline Solar Modules (320 and 325 W)**

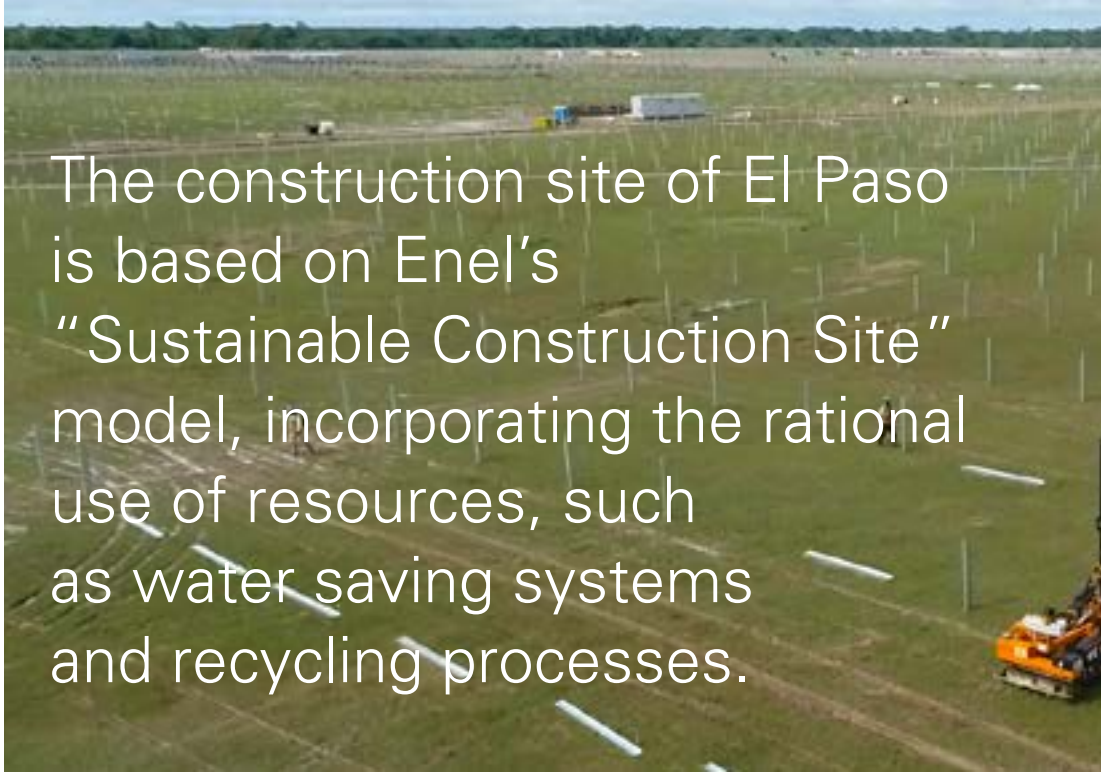
El Paso

Colombia

Plant information

Technology:	**Solar**
Capacity:	**86 MW**
Location:	**El Paso, departamento del Cesar - Colombia**
Type of PV module:	**Polycrystalline Solar modules**

Enel Green Power also landed in Columbia, building the biggest solar power plant in this country



The construction site of El Paso is based on Enel's "Sustainable Construction Site" model, incorporating the rational use of resources, such as water saving systems and recycling processes.


GESIPA

Estrella Solar

Panama

Plant information

Technology:	**Solar**
Capacity:	**8 MW**
Location:	**Village of Llano Sanchez, Corregimiento El Roble, Distrito de Aguadulce, Provincia de Coclé - Panama**
Type of PV module:	**JA Monocrystalline Solar Modules (360 and 365 W)**

HillTopper

USA

Plant information

Technology:	**Wind**
Capacity:	**185 MW**
Location:	**Mount Pulaski, Illinois - USA**
Type of Turbine:	**GE 2.5 MW, rotor diameter 116 m, hub height 90 m**

Horizonte

Brazil


Horizonte is made up of **330.000 solar panels**
and is able to generate over **220 GWh** per year

Plant information

Technology:	**Solar**
Capacity:	**103 MW**
Location:	**Tabocas do Brejo Velho, Bahia - Brazil**
Type of PV Panels:	**Polycrystalline Silicon**

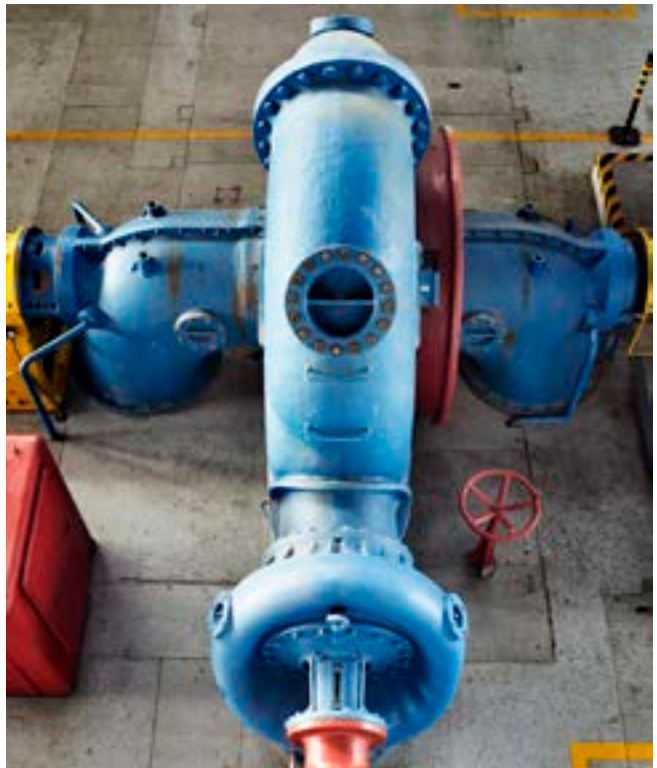
Such energy production is enough to meet the annual energy consumption needs of more than **108,000 Brazilian households** while avoiding the emission of about **129,000 tonnes** of CO_2 into the atmosphere.

Huampani

Perú

Plant information

Technology:	**Hydro**
Capacity:	**(expansion) 1 MW**
Location:	**Lurigancho Chosica, department of Lima - Perú**
Type of turbine:	**Streamdiver® Voith 350 kW**




EDEGEL
CENTRAL HUAMPANI

Los Cóndores

Chile

Los Cóndores project has involved great efforts
from all E&C team to deal with high
technical complexity and adverse weather conditions

Plant information

Technology:	**Hydroelectric**
Capacity:	**150 MW**
Location:	**Chile – Talca**
Tybe of turbine:	**2 Pelton units, vertical axis, with underground powerhouse**


VALTEM MORO

Morro do Chapéu

Brazil

Plant information

Technology:	**Wind**
Capacity:	**172 MW**
Location:	**Morro do Chapéu, Bahia - Brazil**
Type of Turbine:	**Vestas 2.0 MW, rotor diameter 110 m, hub height 80 m**

Macchiareddu

Italy

Plant information

Technology:	**Biomass**
Capacity:	**23 MW**
Location:	**Macchiareddu, Assemini (Cagliari) - Italy**
Type of turbine:	**Siemens HP+LP**

Rattlesnake Creek

USA

It’s the second largest wind project in Nebraska
and can provide clean energy to over **105,000 households**:
introducing Enel Green Power’s Rattlesnake Creek plant,
powered by the wind of the great plains

Plant information

Technology:	**Wind**
Capacity:	**318 MW**
Location:	**Dixon, Nebraska - USA**
Type of turbine:	**Acciona-Nordex 3.15 MW, rotor diameter 125, hub height 87.5 m**


enel

Adobe and Facebook have opted for renewable energy by signing Power Purchase Agreements (PPAs) for long-term clean energy supply

Russi

Italy

Plant information

Technology:	**Biomass**
Capacity:	**31 MW**
Location:	**Ravenna - Italy**
Type of turbine:	**TOSI + Solar PV**

Salitrillos

Mexico

Plant information

Technology:	**Wind**
Capacity:	**103 MW**
Location:	**Reynosa, Tamaulipas - Mexico**
Type of turbine:	**Vestas 3.45 MW, rotor diameter 136 m, hub height 112 m**

Stillwater 2

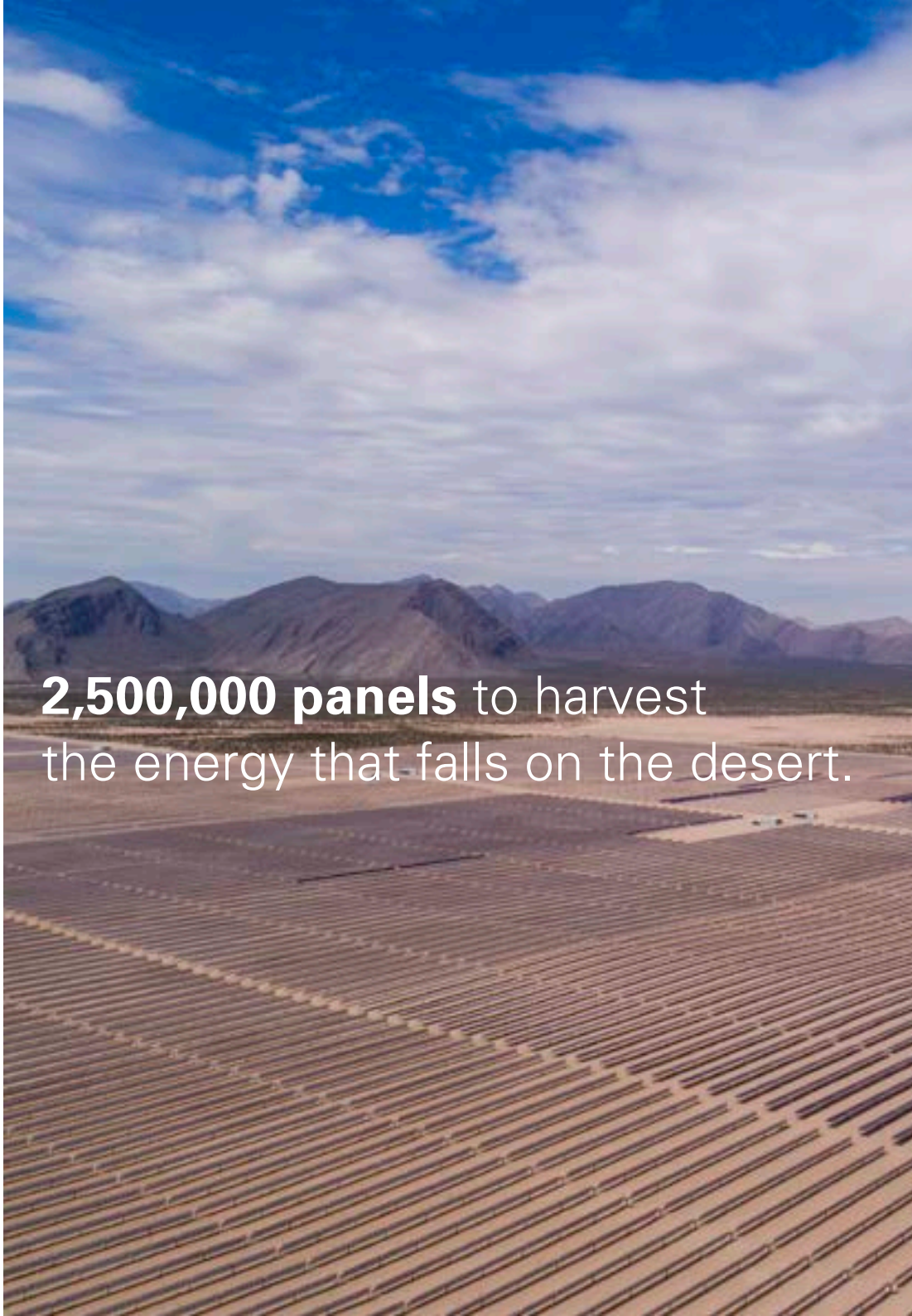
USA

Plant information

Technology:	**Solar**
Capacity:	**27 MW**
Location:	**Fallon, Churchill county, Nevada - USA**
Type of PV module:	**3SUN Solar Modules (140W and 135W)**

Villanueva

Mexico



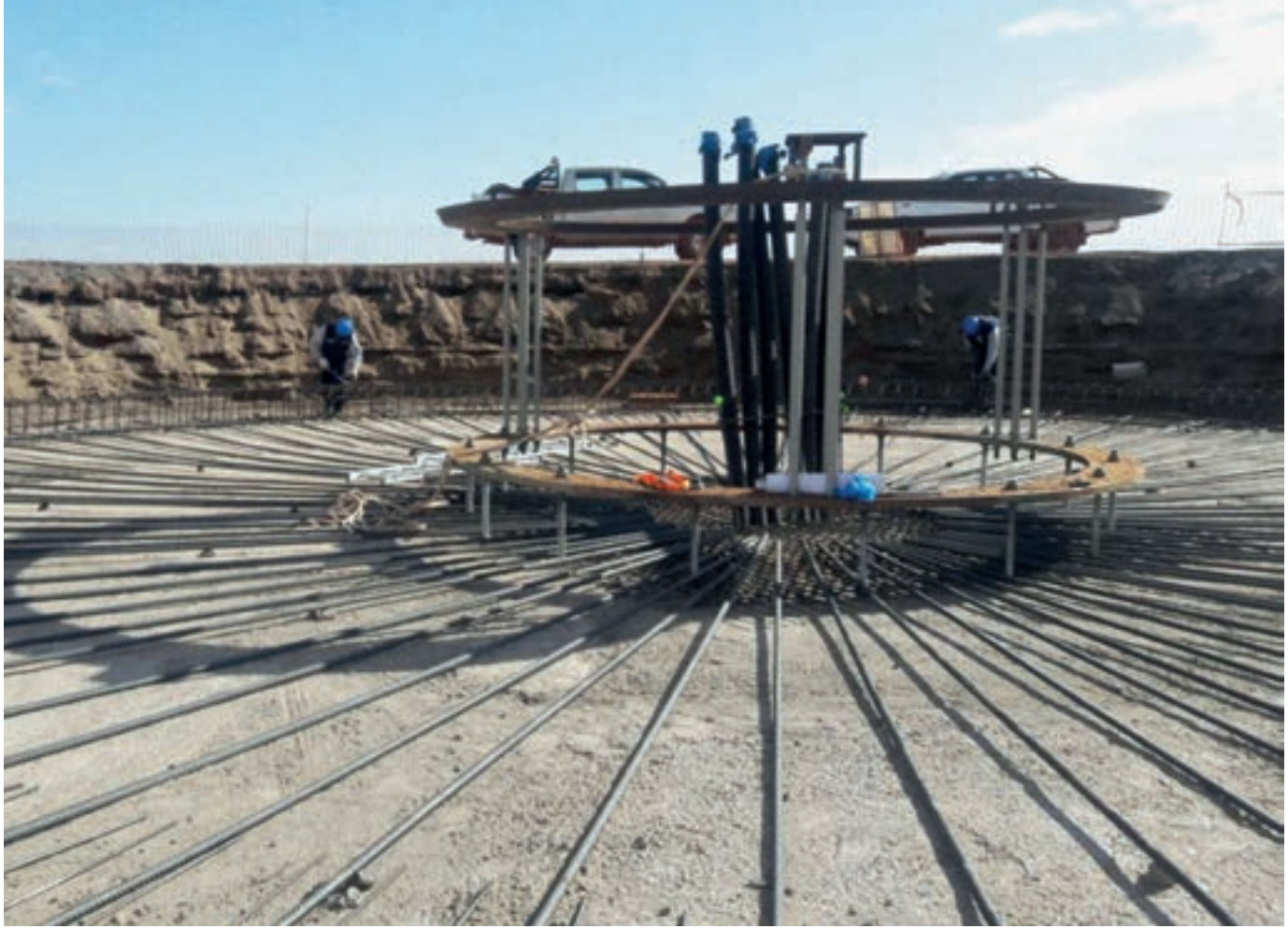
Plant information

Technology:	**Solar**
Capacity:	**828 MW**
Location:	**Viesca, Coahuila – Mexico**
Type of PV Panels:	**Jinko Polycrystalline Solar Modules (320 (originals) and 330 (expansions) W)**

Wayra I

Peru

Building Tomorrow from the wind.
Giving birth to Peru’s first wind farm.



Plant information

Technology:	**Wind**
Capacity:	**132 MW**
Location:	**Nazca, Ica - Peru**
Type of Turbine:	**Acciona-Nordex 3.15 MW, rotor diameter 125 m, hub height 87.5 m**

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