

MERCADO DE INVERSORES PARA MICRO E MINI GERAÇÃO



PEDRO PAULO ALVES
BRANCH MANAGER



SMA É O LÍDER DE MERCADO HÁ MAIS DE 20 ANOS



SUNNY CENTRAL



Utility

SUNNY TRIPOWER



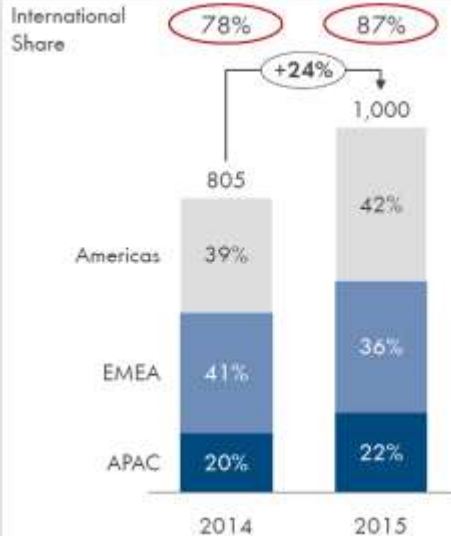
Commercial

SUNNY BOY



Residential

SMA's Global Sales Mix (in € million)



- > Nietestal (1981)
- > 60 GW
- > 1 Billion
- > 3.000 employees
- > 100% FV



O QUE SERÁ APRESENTADO?

Certificações?

Dimensionamento
?

1500V?

PRODYST?

Portifólio?

STRING x
CENTRAL?



TENDENCIAS

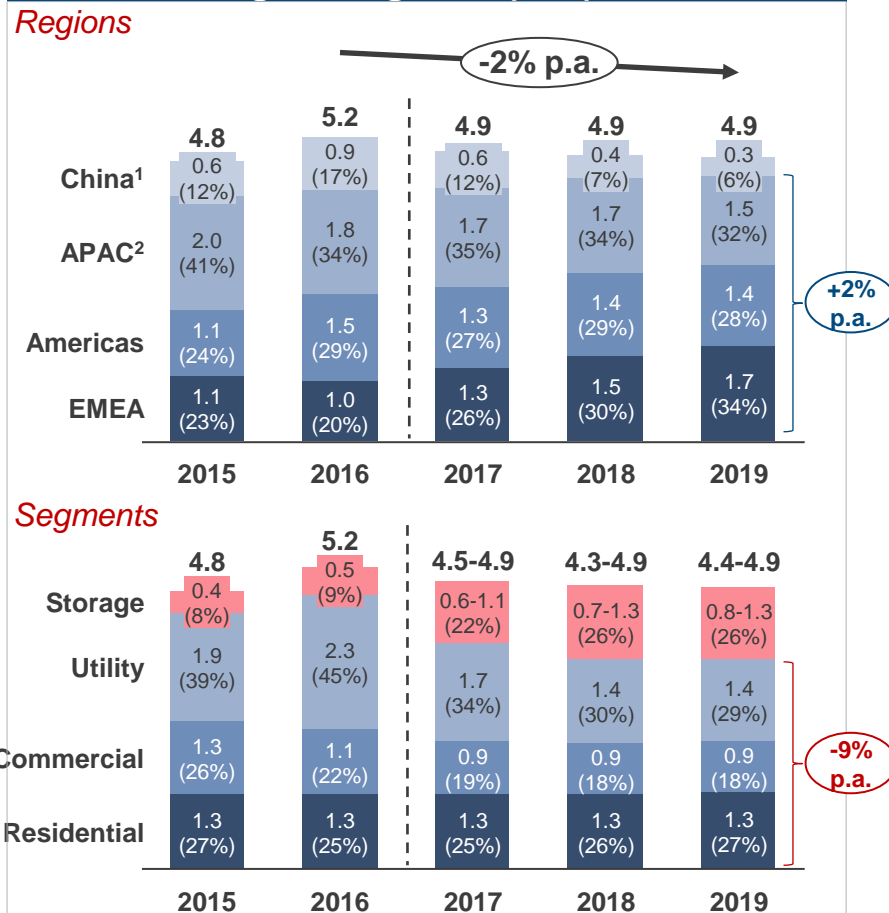
Quais são as principais tendências em inversores no cenário mundial e como o mercado tem influenciado estas tendências.

MERCADO DE INVERSORES - MUNDO

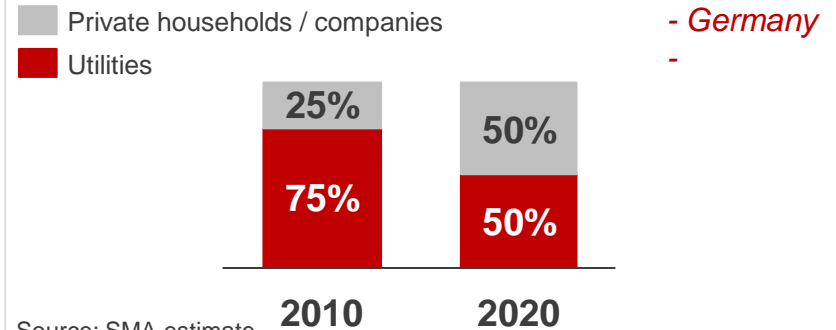
THE CHINESE MARKET IS EXPECTED TO DECLINE BY 70% UNTIL 2019, OTHER MARKETS WILL GROW



Global Inverter Revenues by Region/Segment (bn€)^{3,4,5}



Expected Structural Changes in Energy Supply



- > Comunicação entre geradores e concessionária (peer to peer) afetará a forma do setor elétrico.
- > Grandes conglomerados industriais e comerciais poderão se tornar concessionárias de energia..
- > Mudança do foco de CAPEX para OPEX devido aos novos modelos de negócio.

SISTEMAS RESIDENCIAIS: Auto-suficiencia, IoT.



Yesterday: Produce and Forget

Up to **30%**
Self-Sufficiency



- Investment security with high yields
- Easy installation with a compact, lightweight inverter
- Comprehensive monitoring via mobile devices and Sunny Places

Today & Future: Be Part of the Energy Internet with a Smart Home

Up to **80%**
Self-Sufficiency



PV Inverter System

- Simplicidade e fácil instalação
- Leve, baixo nível de ruído, baixo índice de falha
- Portal para monitoramento

Energy Monitoring

Energy Management & Storage

- Appliances like washing machines
- Heat, Ventilation & Air Conditioning (HVAC)
- E-Mobility & charging equipment
- Detecção remota de falhas do sistema

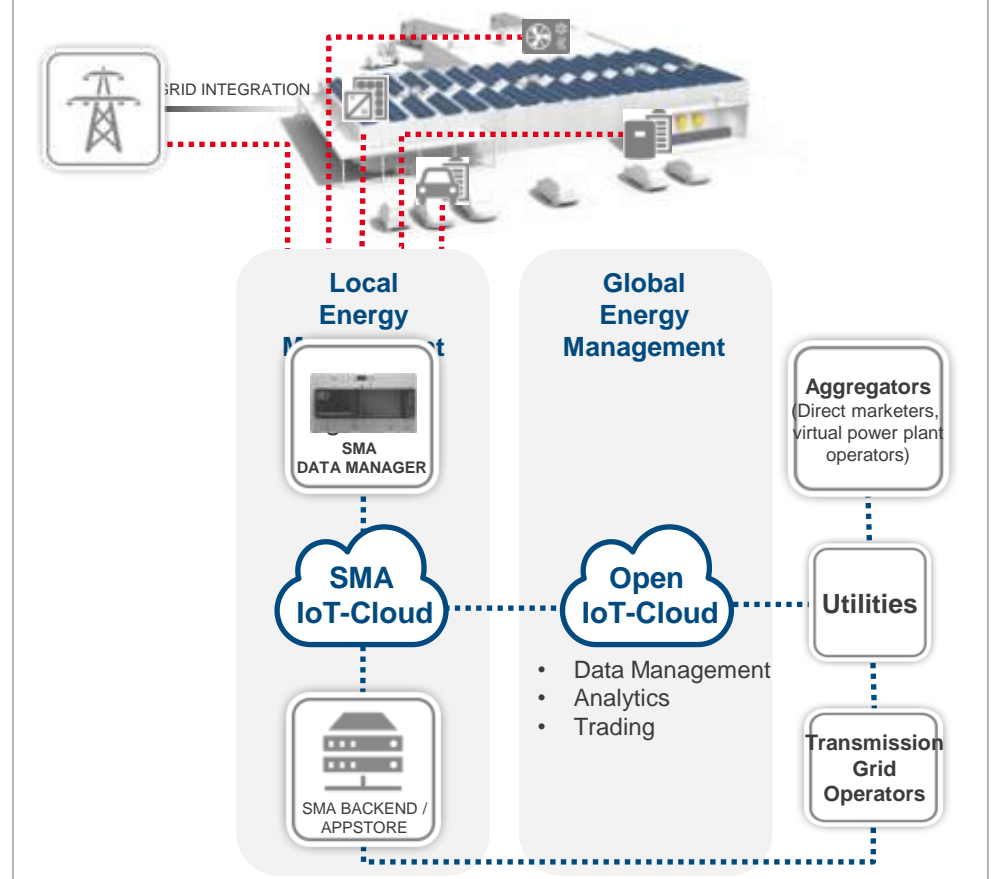
SISTEMAS COMERCIAIS: Custo, Gestão do consumo de energia, Performance



Yesterday:
Produce and Forget



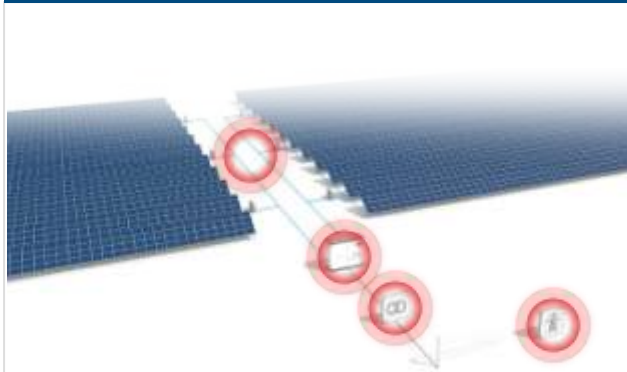
Today & Future:
Optimize Energy Costs Across Sectors



USINAS FV: Maior W/m2, redução de OPEX

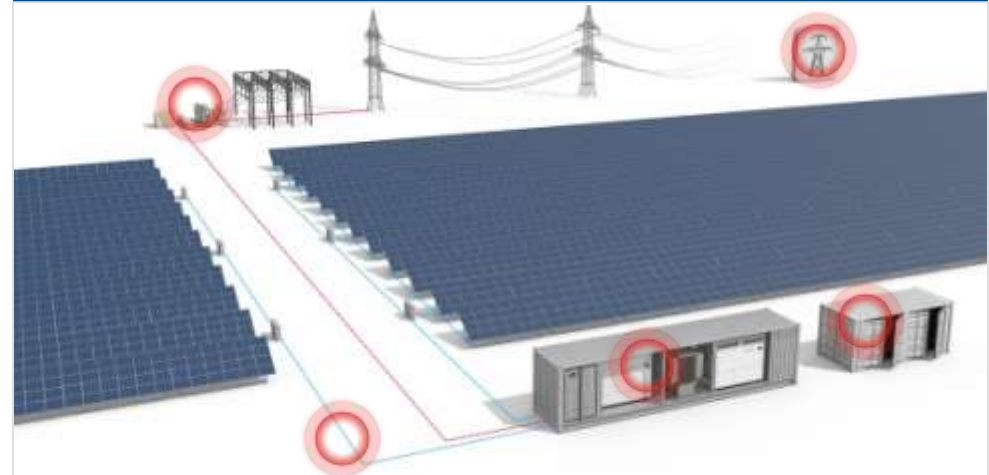


Yesterday: Feed-in Tarif Business Model



- > Foco em **alta eficiência** ($\eta \uparrow$)
- > Inversores até **1MW**
- > Tecnologia 600 V DC
- > Menos modulos por inversor (**low DC/AC ratio**)
- > Europa era o principal mercado.

Today: PPA Driven Business Model¹



- > Mantem foco em eficiência ($\eta \rightarrow$) mas também foca em redução de OPEX
- > Inversores até **5 MW**
- > **Reduced eBOS by up to 10%** with 1,500 V DC
- > More modules per inverter (**high DC/AC ratio**)
- > Global market with many **different local requirements** (standards and environmental)

PORTIFOLIO COMPLETO



RESIDENTIAL

MLP E
SB 1.5/2.5
SB 3000-5000
STP 5000-12000
SB 3600/5000SE
SB 3000-7700 US
SB 3500/4500/5400 JP
SUNNY HOME MANAGER
SMA ENERGY METER
SUNNY PLACES
Extended Warranty
Remote Service
System Check

COMMERCIAL

STP 20000TL/25000TL
STP 15000TL
STP 10000/20000TL-JP
STP 12000/15000/20000/24000/30000-US
STP 75
STP CORE 1
STORAGE SOLUTION COMMERCIAL
SMA CLUSTER CONTROLLER
SMA INVERTER MANAGER
SMA INVERTER MANAGER
STP MV STATION
SUNNY PORTAL
SUNNY DESIGN
Commissioning
Extended Warranty
Upgrade
Operation & Maintenance

UTILITY

SUNNY CENTRAL CP XT
SUNNY CENTRAL CP-JP
SUNNY CENTRAL 2.2/2.5 MW
SUNNY CENTRAL STORAGE
SUNNY CENTRAL- US 1.85/2.2/2.5 MV
STP 12-30 kW, IEC and US
SUNNY TRIPOWER 75
SMA Power Plant Controller
SMA String Combiner/Monitor
GPM SCADA and Monitoring solutions
Siemens gird connections on High- and Medium Voltage level
MV POWER STATION
STP MV STATION
MV BLOCK
Commissioning
Extended Warranty
Preventive Maintenance
Operation & Maintenance

OFF-GRID & STORAGE

SUNNY BOY STORAGE
SUNNY HOME MANAGER
SMA ENERGY METER
SUNNY ISLAND 4548-US/6048-US
SUNNY ISLAND 6.0/8.0H
SUNNY ISLAND 3.0/4.4M
6/12/36x
MULTICLUSTER-BOX 6/1236
FUEL SAVE CONTROLLER
SUNNY CENTRAL STORAGE 500/1000
SUNNY CENTRAL STORAGE 2200/2500
Supplementary Services
Extended Warranty
Preventive Maintenance
Commissioning

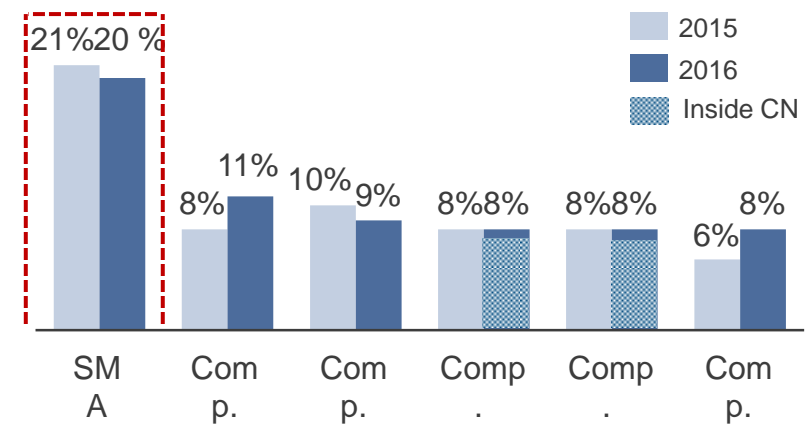
LIDERANÇA

Solar Power World
Leadership in Solar Power
Award 2014



- > Proposta de valor SMA is the only global player with a complete portfolio in all segments. Therefore, SMA has had the **highest market share** in sales for more than two decades.
- > Some competitors mainly benefit from **local market** developments. The biggest Chinese solar inverter player only shipped inverters for 40m\$ during the first nine months 2016 in international markets, while domestic sales accounted for 95% of its sales.
- > Some large conglomerates survived in the PV inverter business only in their home market (e.g. with

Revenue Based Market Share²



PLAY IT SAFE WITH SMA



Obrigad
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