siliken

innovation experience

SILIKEN PRESENTATION
SILIKEN MANUFACTURING RMN S.R.L.

Antonio Navarro

(15/03/2011)

1. Short introduction to Siliken

2. 4 strategic pillars of innovation: the shift of the company
    - Geographical diversity
    - Product diversity
    - Brand differentiation and quality
    - Value chain integration

3. Siliken Project in Romania

4. Conclusions

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Siliken is a global company integrated in the value chain of the solar industry, with the commitment and determination to expand its activities into other renewable energy sectors by developing and implementing innovation programs that guarantee energy solutions, providing the highest levels of quality, performance and profitability for our customers.

Our motto defines our position:

innovation experience

Innovation and technological control in the photovoltaic sector have allowed us to become fully integrated in the value chain

1 Solar Silicon

We are one of the few companies integrated in the manufacture of Solar Silicon with FBR technology.

Silicon is the raw material used in the solar cell production process.

2 PV Cells

We hold collaboration agreements with several of the market's leading manufacturers.

However, we are firmly committed to design high efficiency cells as one of the most important innovation projects that we are currently working on.

3 PV Modules

We are firmly committed to quality as a form of differentiation. Design, engineering and manufacturing are all carefully controlled to ensure that our solutions provide higher levels of performance.

4 Inverters & Components

We also supply all the components needed to create a photovoltaic installation: power converters, structures, hooks, connection boxes, etc.

5 Development & TurnKey, O&M

We offer a fully integrated "turnkey" product, from design to construction through to operation and maintenance.

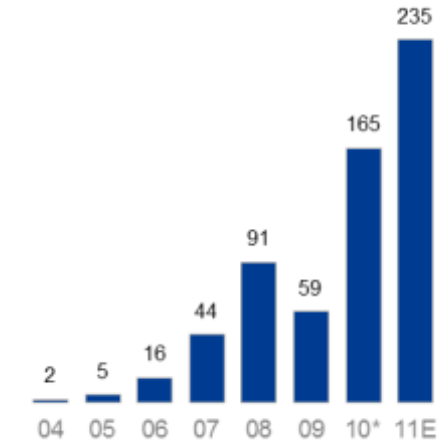
We have a vast experience of ground and rooftop installations in countries such as Spain, Italy, Germany, France and the US, giving us a Know How that benefits our customers.

Siliken has a private equity shareholder, ensuring the group's long-term viability and financial soundness

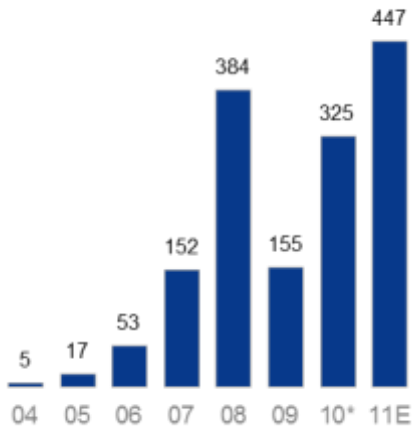
Key figures 2004-2011P

**2010 not audited*

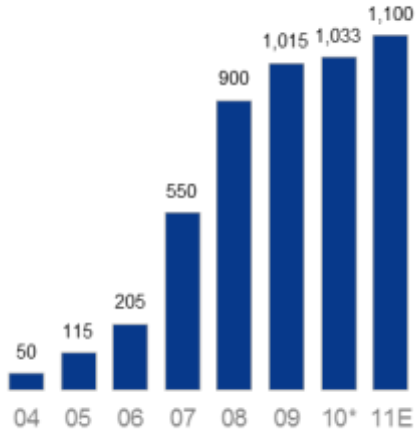
Sales 2004-2011E (MW)



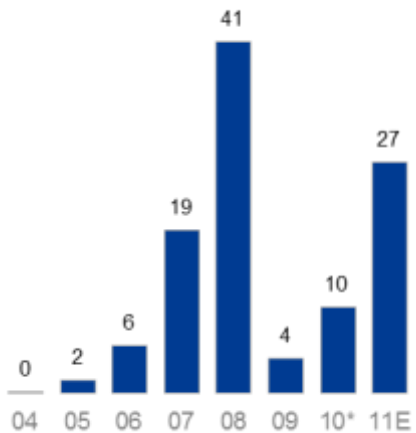
Sales 2004-2011E (Million €)



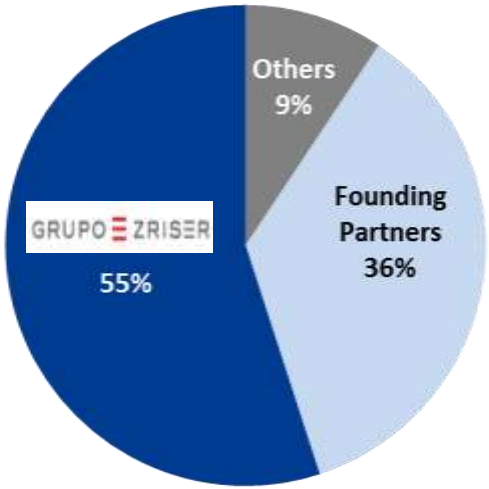
Employees 2004-2011E



EBITDA 2004-2011E (Million €)



Siliken Shareholder Structure



Zriser Group Private Equity

- The Zriser Group is the family office of the Serratosa Lujan family.
- It covers several investment vehicles and its investment strategy is wide-ranging, with interests in the capital market, private equity, the property market and in industry

Founding Partners

- Carlos Navarro (18%)
- Alfredo Puche (7%)
- Gonzalo Navarro (7%)
- Francisco Clavel (4%)

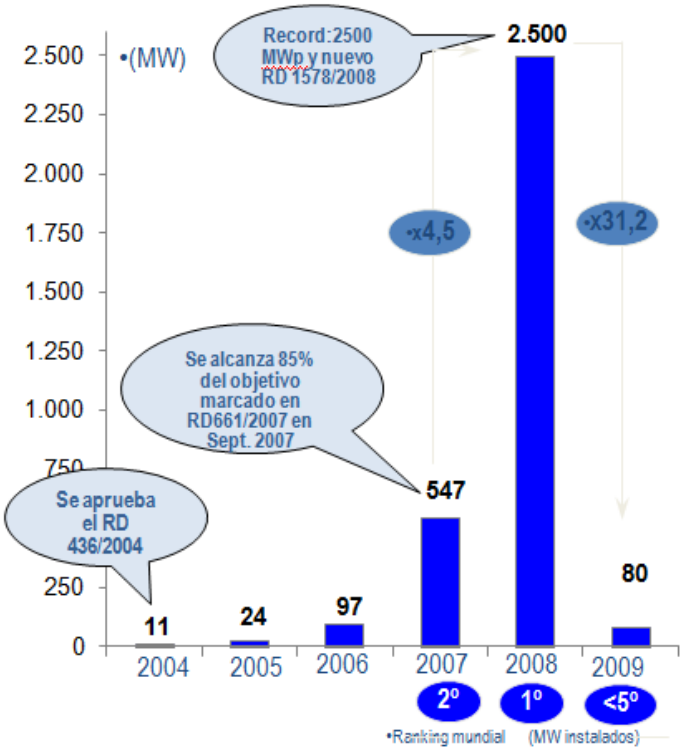
Other shareholders

- The 9% of "other shareholders" includes employees, relatives and friends of the company.

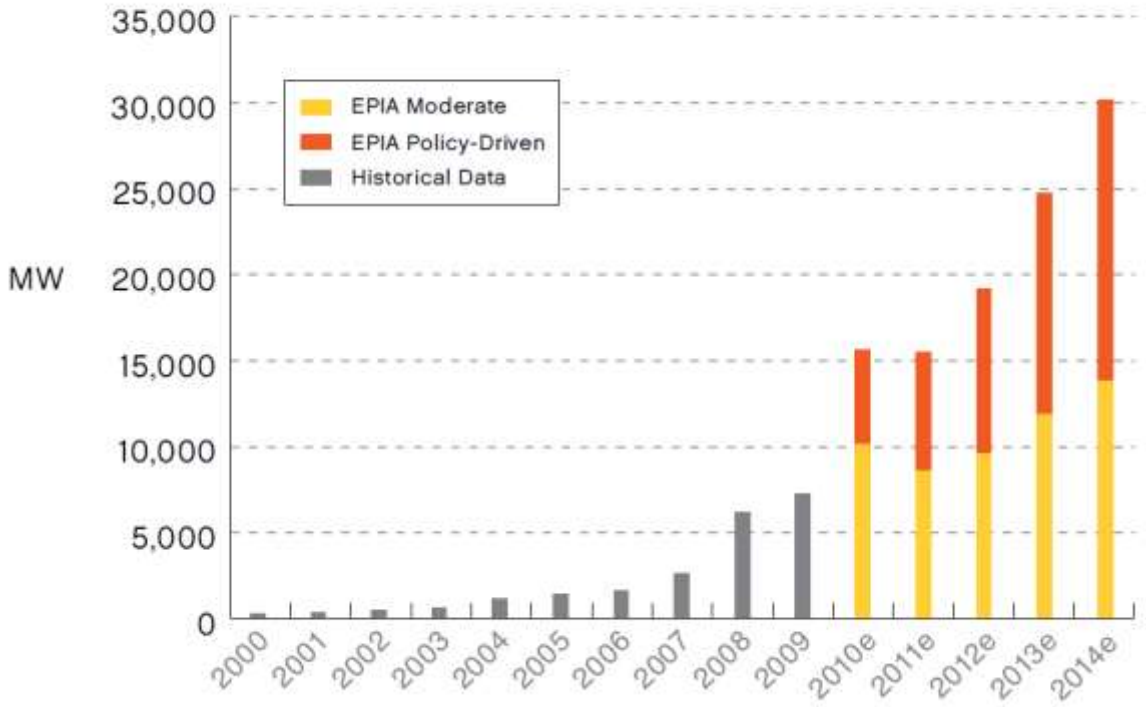
Circumstances that forces the innovation and the reinvention

- Legislativ changes in Spain: RD1578/2008, RD1003/2010, RD1565/2010, RDL14/2010
- Worldwide financial crisis
- Disappearance of the Spanish market as the global market remains
- Strong competition from Asian producers of photovoltaic modules (mainly from China)

Potencia fotovoltaica instalada en España anualmente[1]



Photovoltaic power installed worldwide annually



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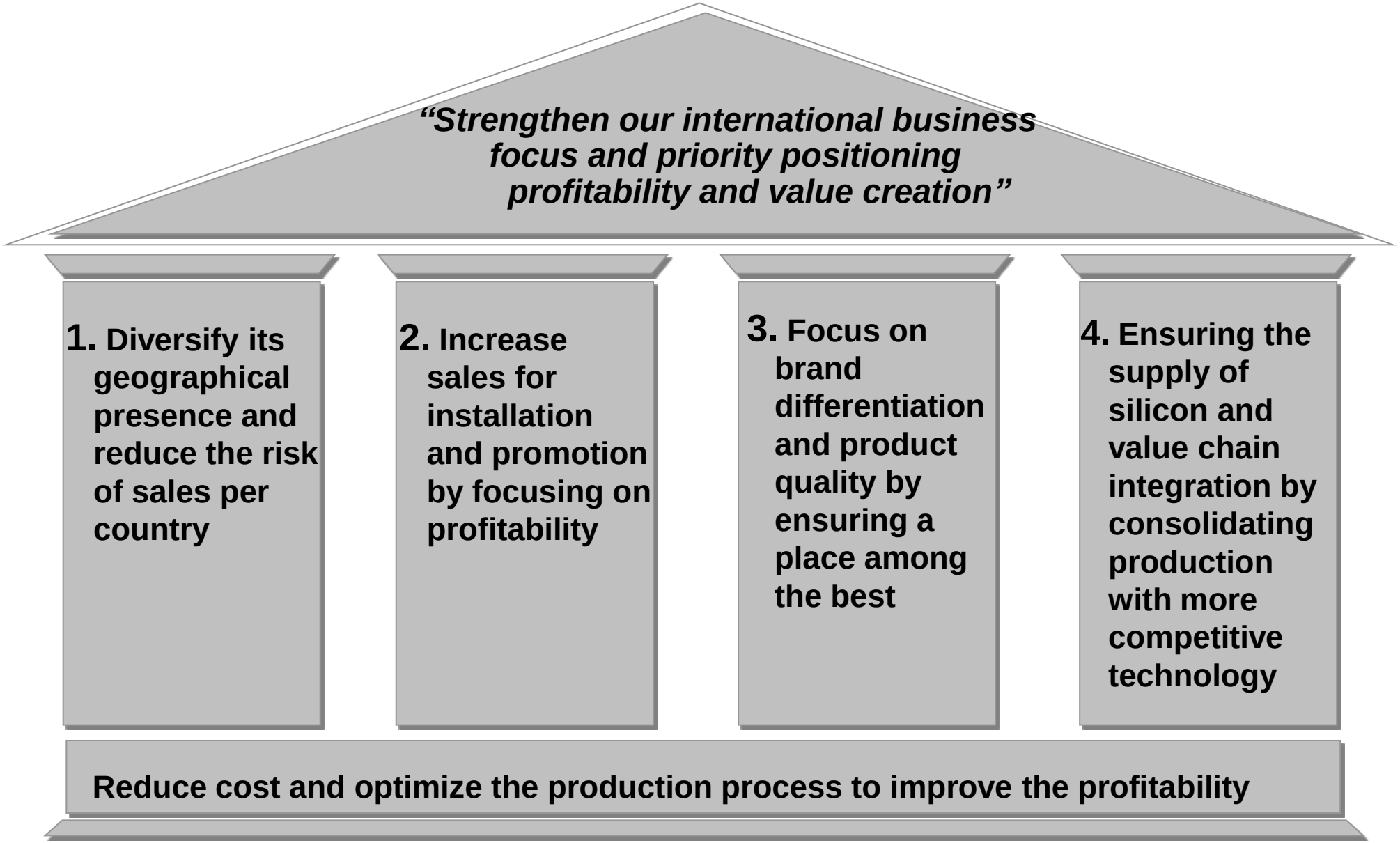
4 “Strategic Pillars” to manage the innovation



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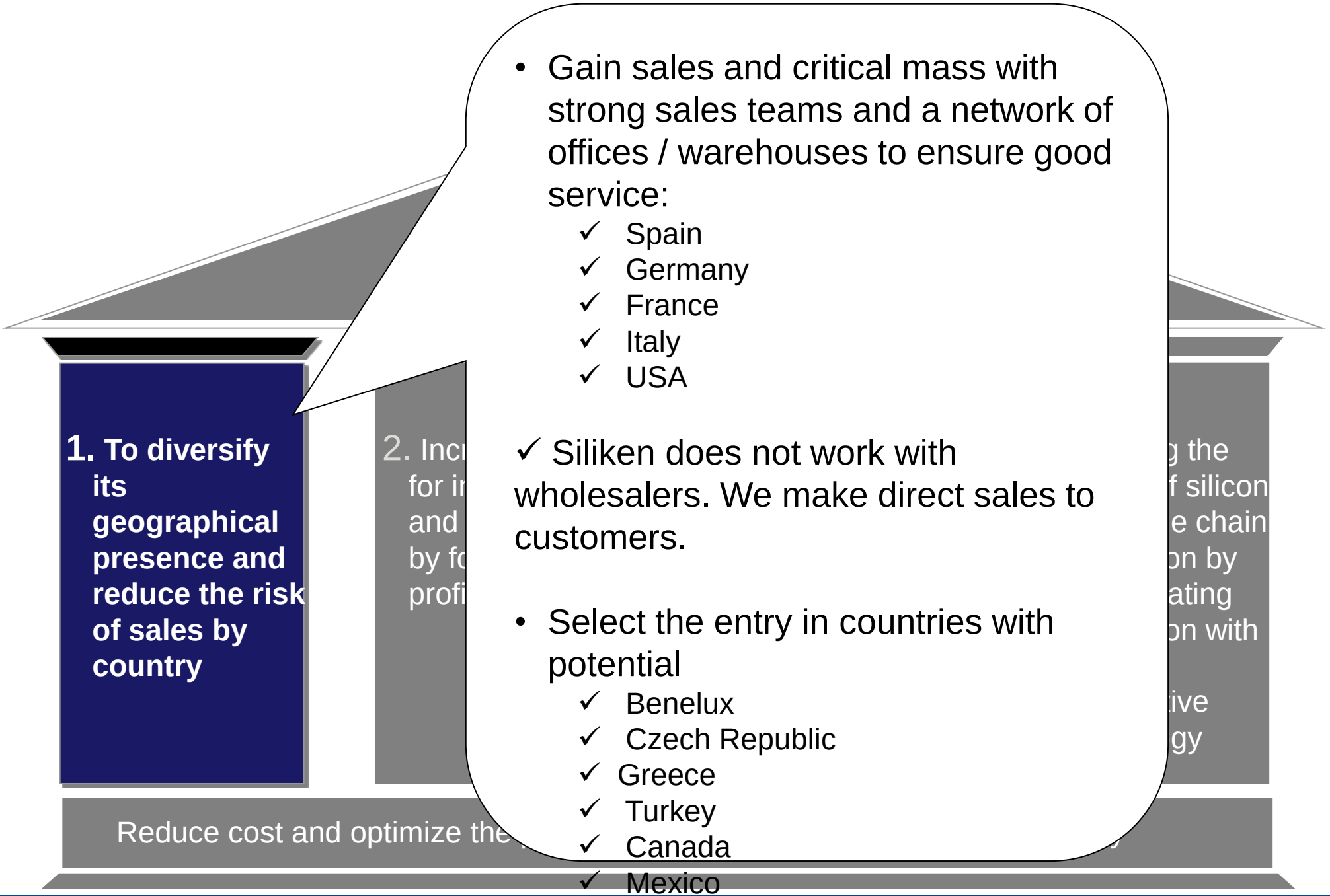


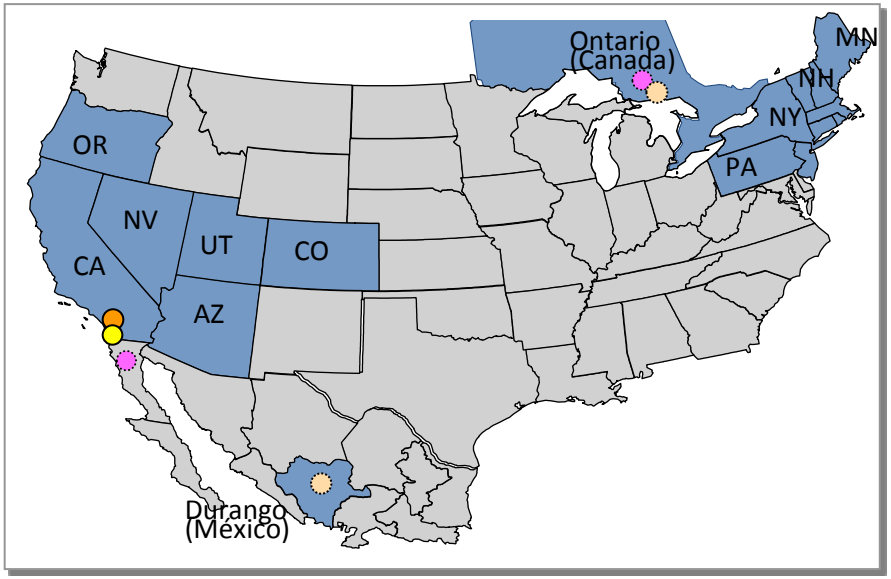
- Gain sales and critical mass with strong sales teams and a network of offices / warehouses to ensure good service:
  - ✓ Spain
  - ✓ Germany
  - ✓ France
  - ✓ Italy
  - ✓ USA

✓ Siliken does not work with wholesalers. We make direct sales to customers.

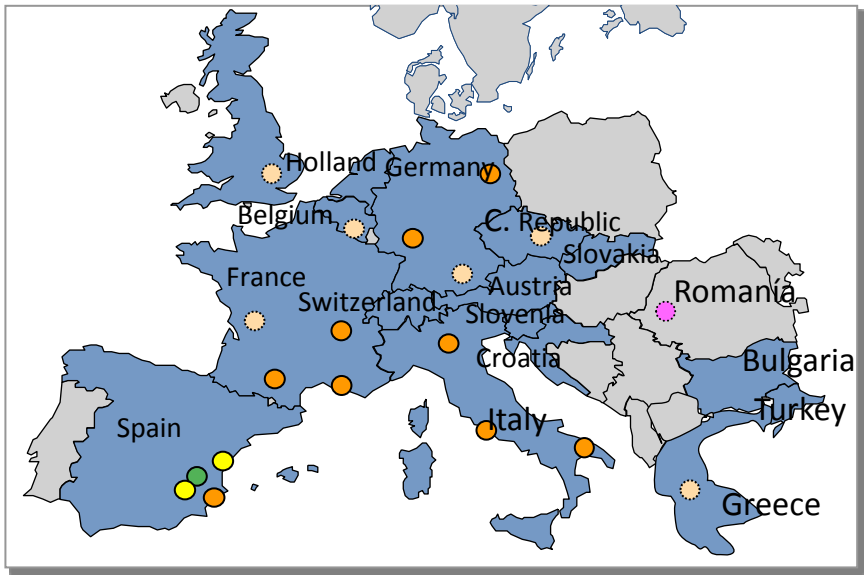
- Select the entry in countries with potential
  - ✓ Benelux
  - ✓ Czech Republic
  - ✓ Greece
  - ✓ Turkey
  - ✓ Canada
  - ✓ Mexico

Siliken forecasts to consolidate its geographical diversity during 2010-2012… (Present in the 80% of the market)

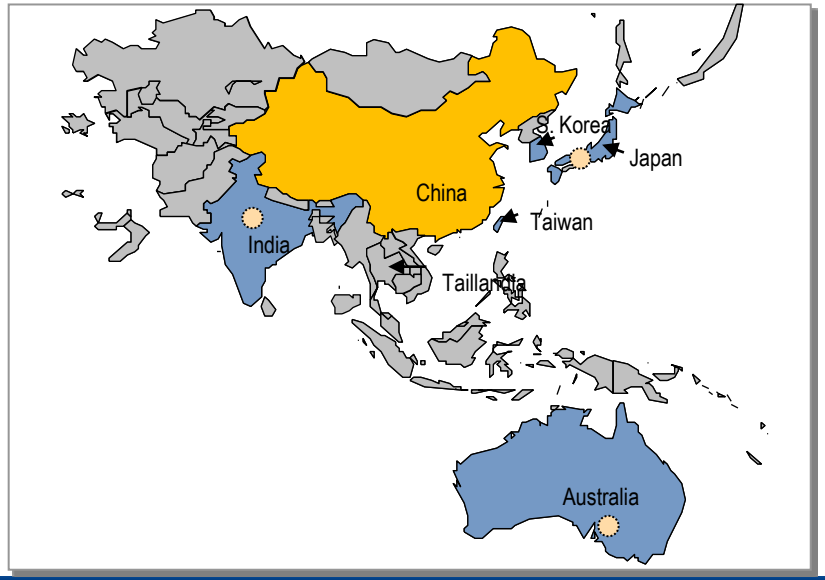
Siliken Presence in the USA and Canada '10 - '11



Siliken Presence in Europe '10 – '11

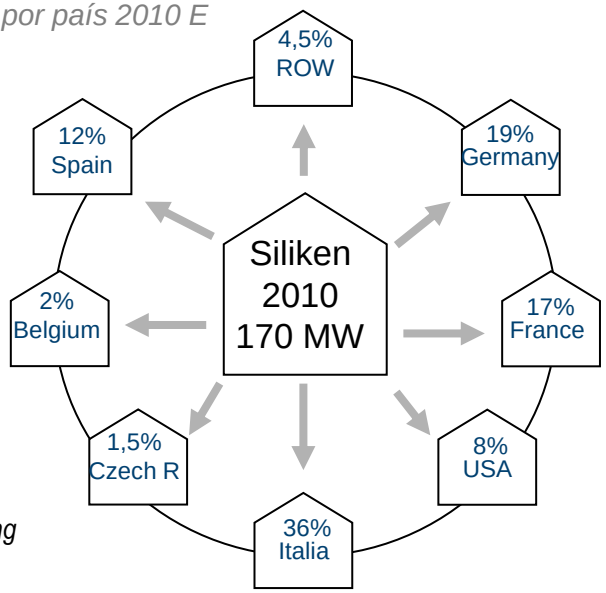


Siliken Presence in Asia '10 - '11

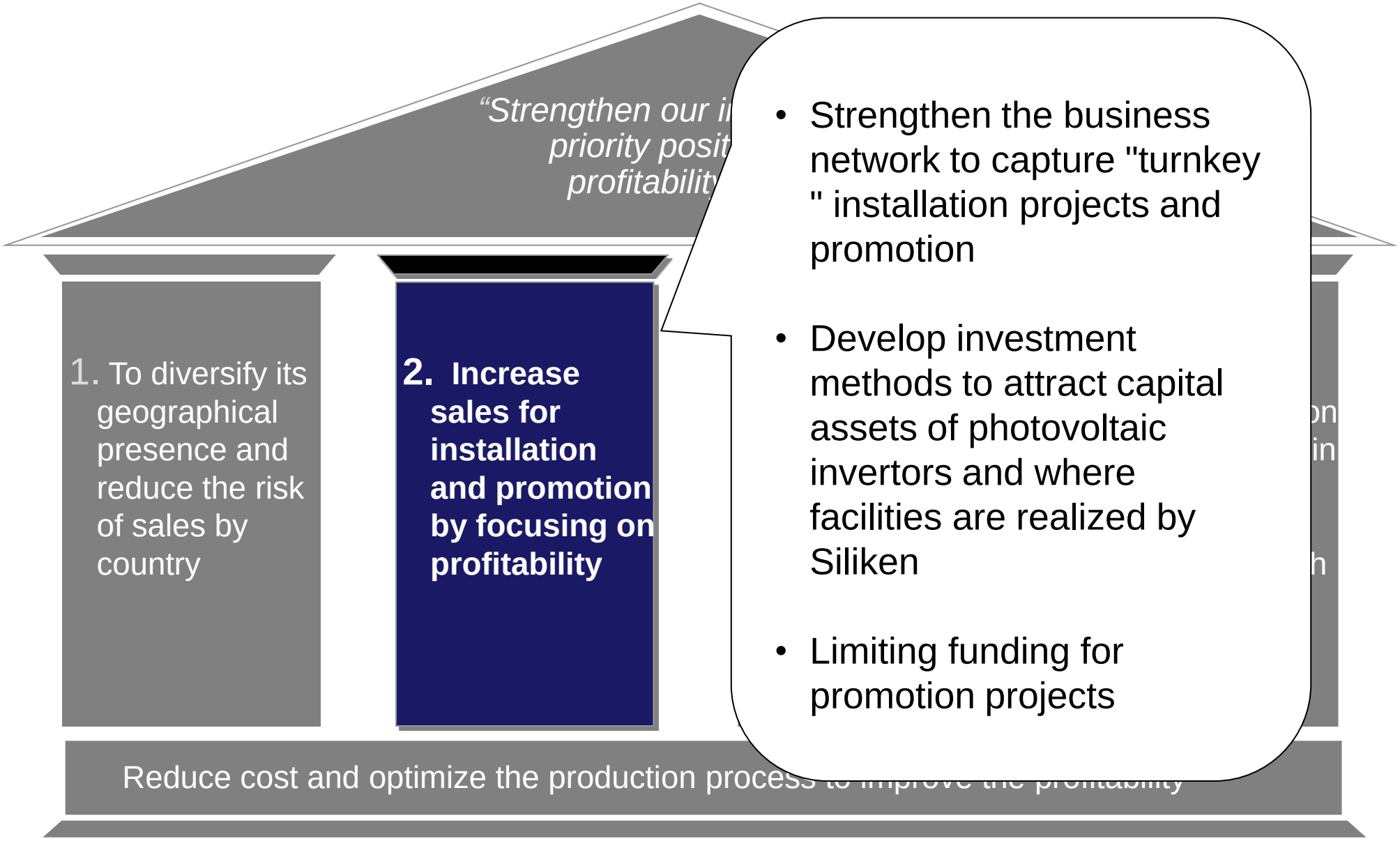


- *Toll production agreements*
- *Commercial Presence*
- *Commercial offices*
- *Future office opening*
- *Current module production plant*
- *2010-2011 production plant opening*
- *Silicon production plant*

Ventas por país 2010 E



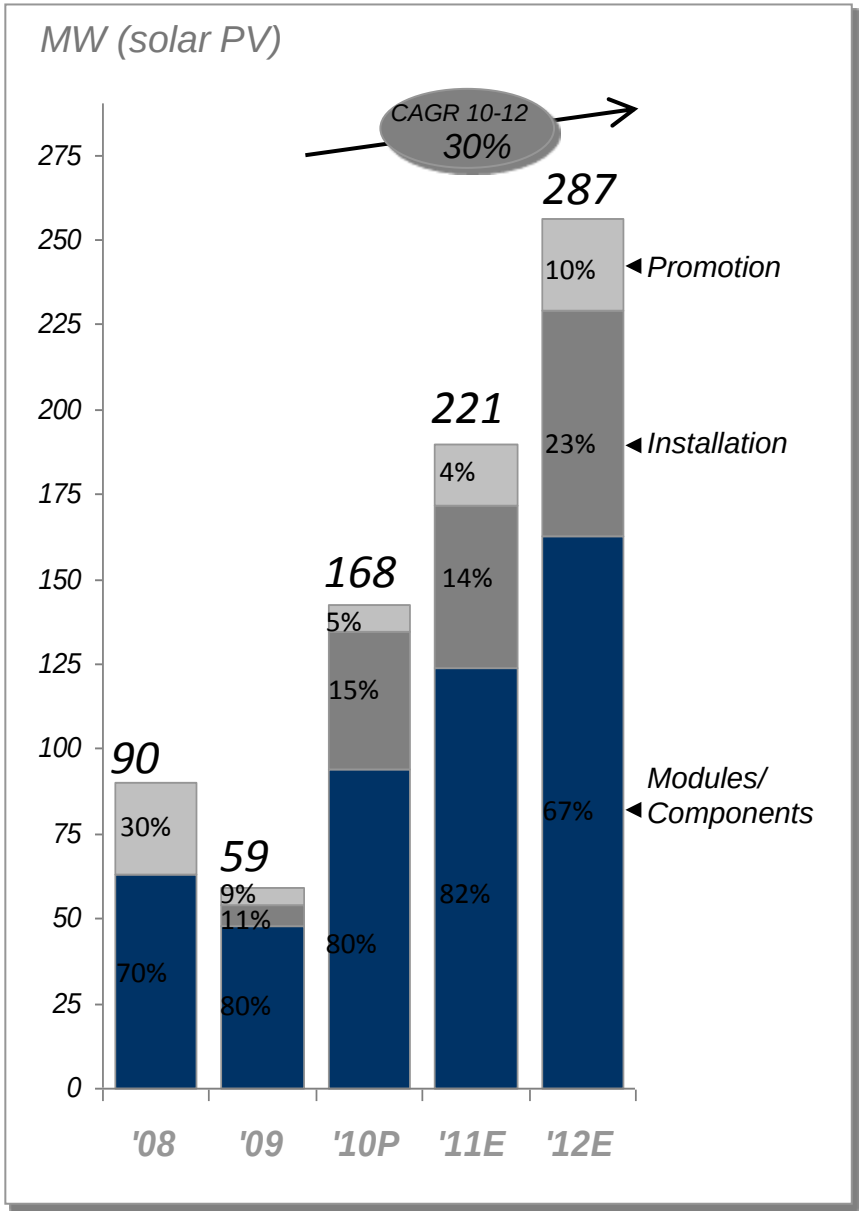
4 “Strategic Pillars” to manage the innovation

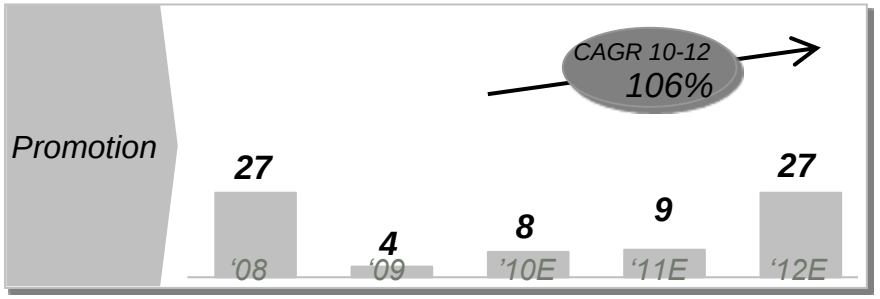


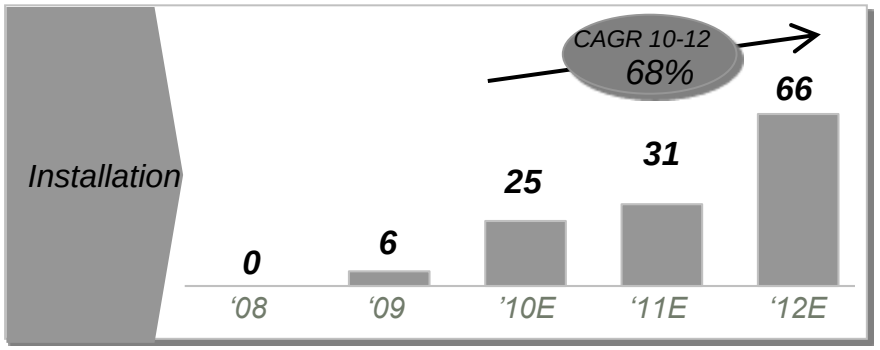
- Strengthen the business network to capture "turnkey " installation projects and promotion
- Develop investment methods to attract capital assets of photovoltaic invertors and where facilities are realized by Siliken
- Limiting funding for promotion projects

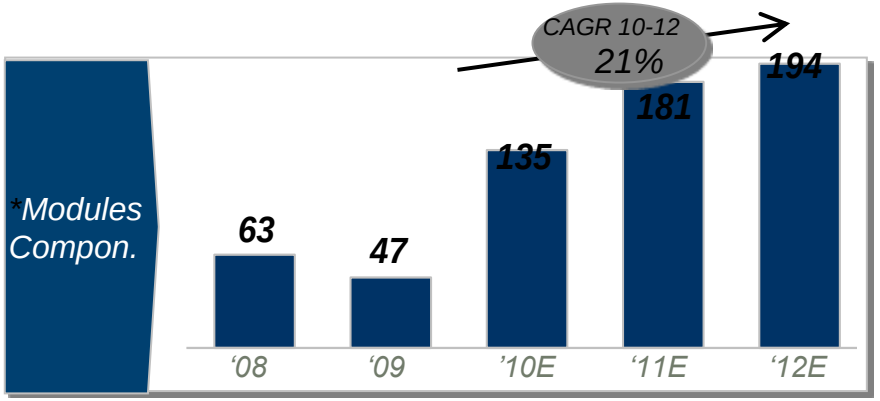
Siliken expects progress in the diversification of product development and sales facilities during the 2010-2012 .

Siliken MW share per country 2009E-2012E









*Including Modules, PV Kits and Inverters

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4 “Strategic Pillars” to manage the innovation

- Certify the quality of products and differ with value-added services:
  - ✓Certify quality independent and prestige (TÜV, Photon)
  - ✓“Hearing the voice of the customer”
  - ✓After sales services
  - ✓Logistics and service time
- Implement ISO in group
- Marketing Plan ’10-’11

ro enfoque comercial
nto internacional priorizando
y la creación de valor”

3. Enfoque en Diferenciación de la marca y calidad de los productos asegurando un puesto entre los mejores

4. Asegurar el suministro de Silicio consolidando la producción con la tecnología más competitiva

Reducir costes y optimizar los procesos productivos para mejorar la rentabilidad

Laboratory of photovoltaic modules.

Siliken has an area of research and development of photovoltaic modulesthat perform the following activities:

1. Research and development of new products.

2. Own develoment of the necessary machinery for the production and quality control of the photovoltaic modules (high Know-How).

3. Final product quality control

4. Automation of critical processing steps in order to ensure repeatability.

5. Performance of the following tests:

- Modules efficiency by exposure to solar radiation.
- Mechanical load.
- Isolation of the modules in the presence of moisture.
- Salt spray.
- Diode resistance.
- Robustness of terminals.
- UV aging.
- Thermal cycling.

Assurance and Certifications.

ASSURANCE:

• 2 years installation guarantee (construction and components). Repaired and replaced materials shall be warranted for 12 month (labor and materials).

• **Siliken modules**: 10 years of product, 90% of production for 10 years and 80% for 25 years.

• **Siliken structure**: 10 years of product.

• **Siliken investors**: 5 years of product, with the possibility of extending the guarantee to 10 or 15 years.

• **PR warranty (Perfomance Ratio or installation performance).**

• **Annual availability guaranteee facility.**

CE mark, which guarantees that our products are adapted to the European market.

TÜV certification, which guarantees high quality of our PV modules.

UL Listed accreditation. Certifies that our modules meet all fire regulations of electric equipment.

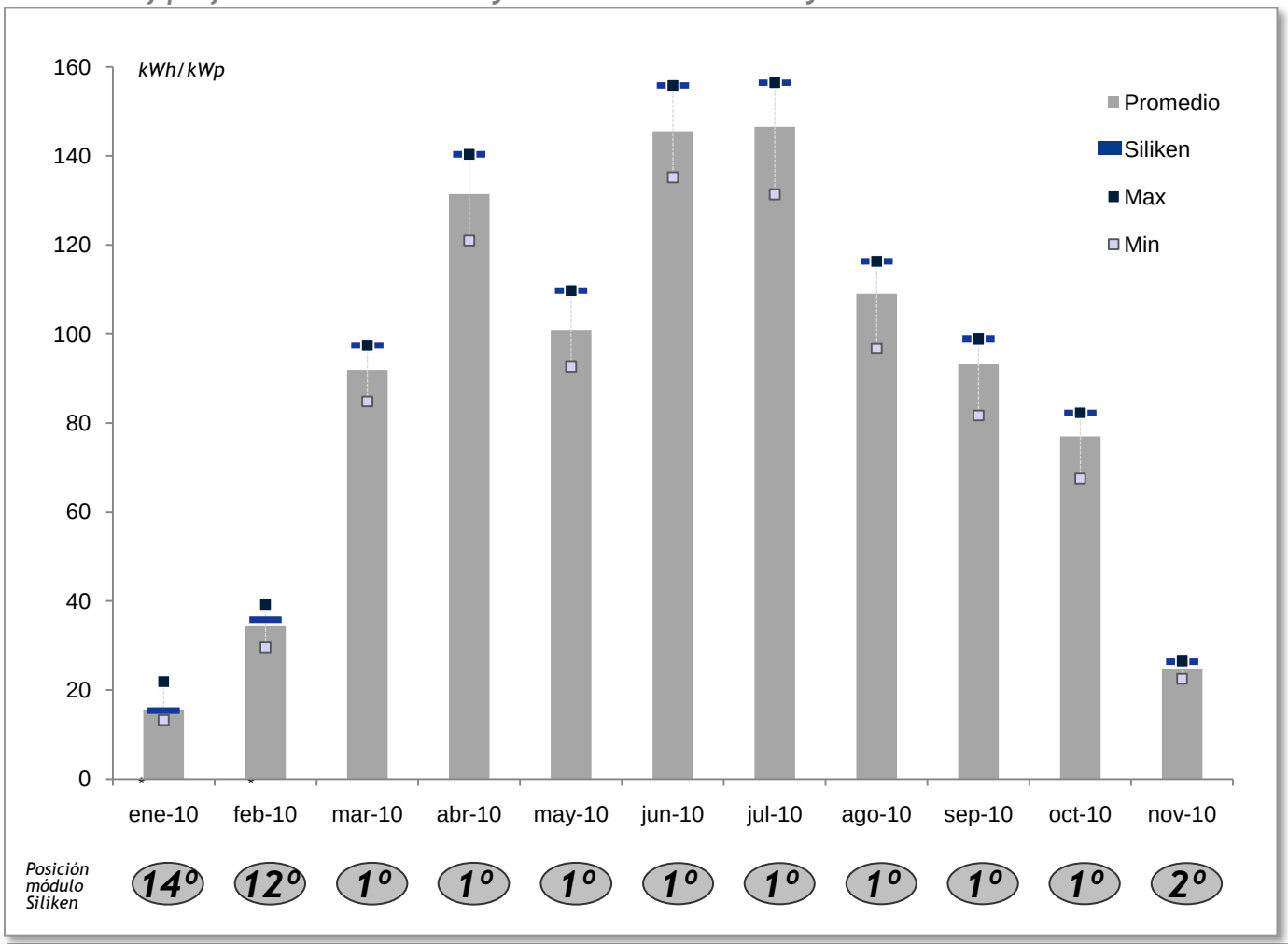
ISO 9001 certification, which guarantees manufacturing quality, production and management.

Miembers od the AssociationPV CYCLE. Collection and recycling of photovoltaic modules at the end of its life, with virtually no environmental impact.

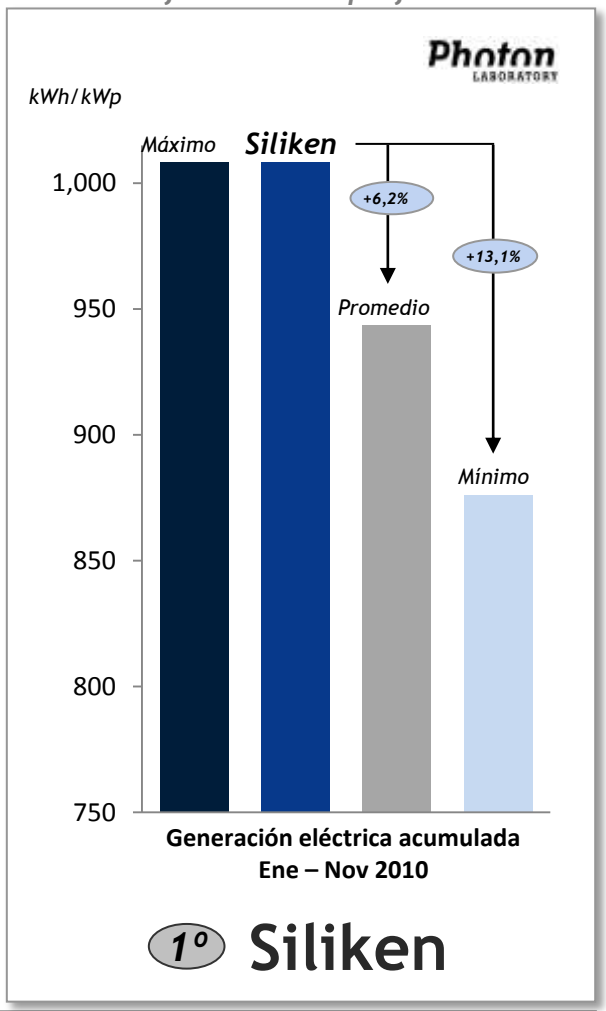
ISO 14001 certification, which guarantees manufacturing quality, production and management.

...in 2010 Photon lab has positioned Siliken modules of high quality

Evolution of performance measured by PHOTON modules every month in 2010



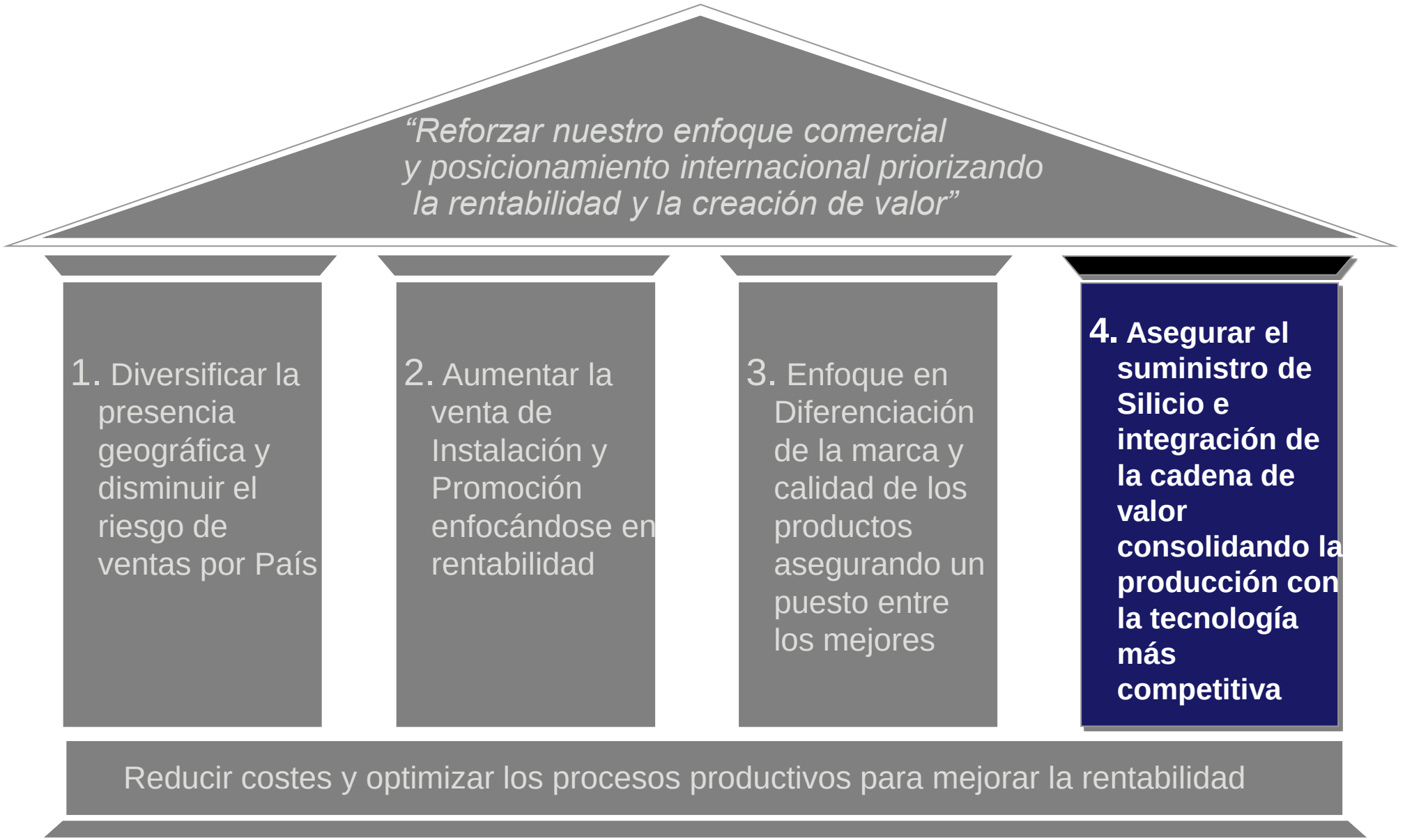
Evolution of cumulative performnace



Siliken modules is number one in 2010; generating 6,2% more energycompared to the average of all modules studies and 13,1% compared to a minimum.

Fuentes: Estudios comparativos del laboratorio Photon durante 2010

4 “Strategic pillars” to manage the innovation



Diversifies its product portfolio on sales of modules and components, “turnkey” installations ans project development.

Silicon | Lingotes | Obleas | Células | Machinery | Modules | Components | Installation | Management/ Project promotion

PRODUCT 1

Siliken modules sales and photovoltaic components

PRODUCTO 2

Estudios técnicos, ejecución y operación y mantenimiento de instalaciones FV en suelo y cubierta

PRODUCT 3

Management and photovoltaic project promotion on land and roof.

Innovation and technological control facilitate the integration and quality guarantee

Silicon purification plant

We are one of the few global companies with its own plant integrated manufacturing solar grade silicon of high purity, allowing us to guarantee the highest quality in all processes from the beginning to the end of the chain, transforming the initial raw material facilities and projects that generate clear energy worldwide.

Siliken is a pioneer in the production of silicon in Spain guaranteeing thesupply of material “bottleneck” in the value chain of the photovoltaic sector.

Silicon Production Plant Siliken

Localition of the main silicon plant

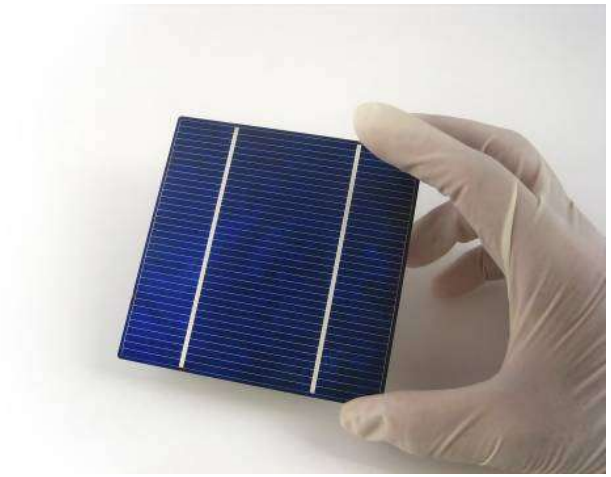
Fuente: Photon Consulting 2008

In Siliken we continue betting on the differenciation

Laboratory high efficency cells

Self-development of monocrystalline solar cells of high efficiency is one of the most important projects in which we currently operate, allowing greater integration to ensure the highest quality

Research of high efficiency cells (>20%).



- Siliken has a laboratory of 650 m^2 located at the Polytechnic University of Valencia (España).
- Own development of a pilot line for manufacturing high efficency cells.

- <u>Objetive:</u>
- Design of new tools to research production processes of hich efficiency solar cells (>20%).
- Creation of intellectual property (patents).
- Creation of tools and transferable processes for production.
- Increasing integration in the PV value chain.
- The improving of competitiveness and the reduction of costs (25% reduction on isntallation costs)

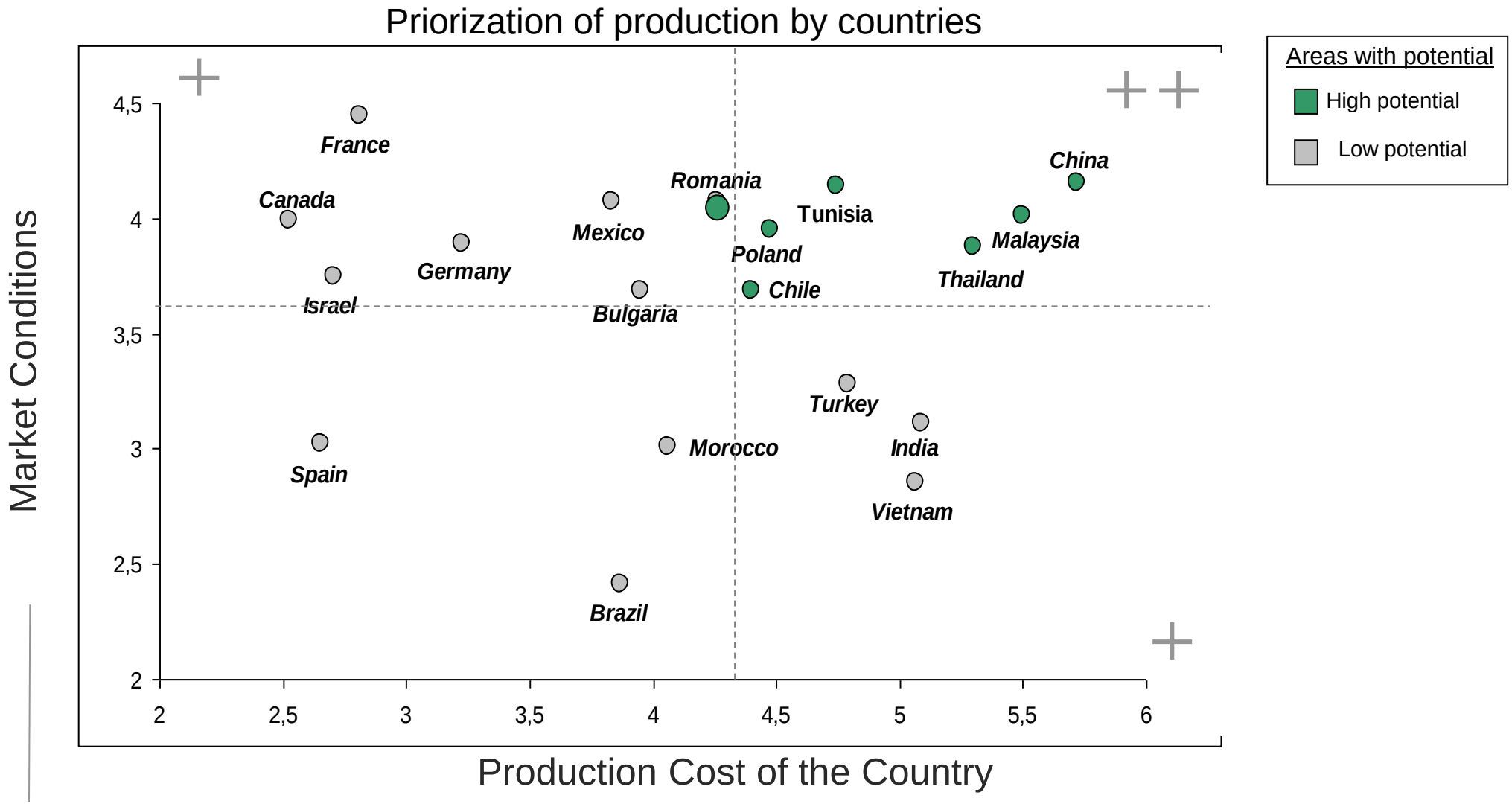
1. Breve introducción de Siliken

2. 4 pilares estratégicos para la innovación: reorientación de la empresa
    - Diversidad geográfica
    - Diversidad de producto
    - Diferenciación de marca y calidad
    - Integración cadena de valor

3. Proyecto Siliken en Rumania

4. Conclusiones

Low cost country



Why Timisoara?

Pros

- Western capital of Romania.
- Strategic location: Privileged position to supply close European markets.
- Recursos Humanos: Manpower with a high level of preparation/skills and at low cost.
- Positive image of Spain due to emigration form Romania to Spain.
- Good contacts with Spain: twice a week direct flights with Wizzair Aerolines form Valencia to Timisoara lasting 3 hours .
- Middle-class city with good living conditions for expatriates.
- Security requirement similar to Spain.
- People with goog level of English and Spanish.
- IMPORTANT: We know a Romanian- functional team with 4 years experience (senior automotive engineers) with the possibility to join the project.

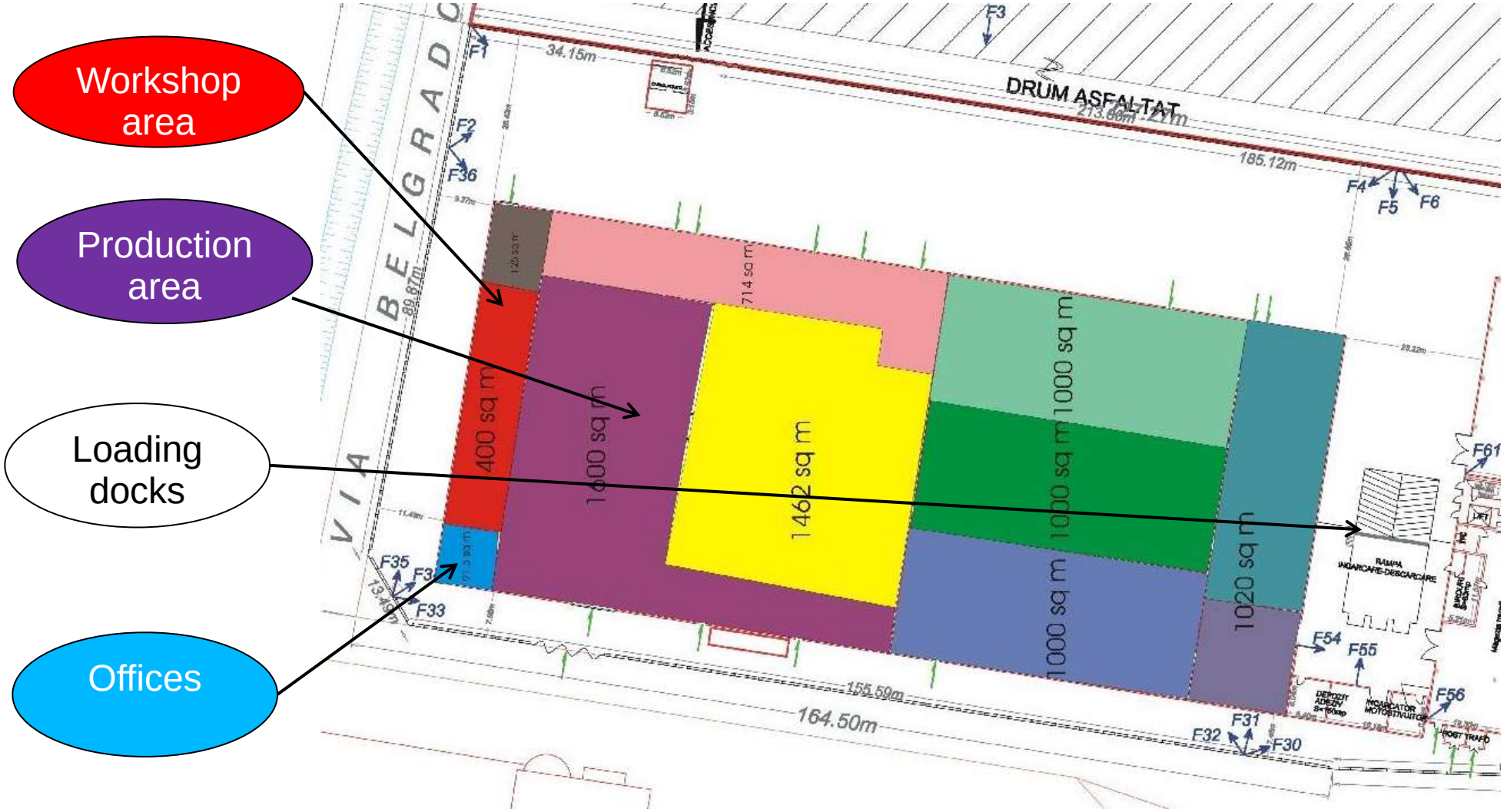
Cons

- Difficulty to find people with high level of training.
- Rent od vessels in Romania at similar prices to those in Spain.
- We are asked long-terms contrats for rental boxes (aprox. 5 years).

Selection of rental buildings for the establishment of Siliken in Timisoara

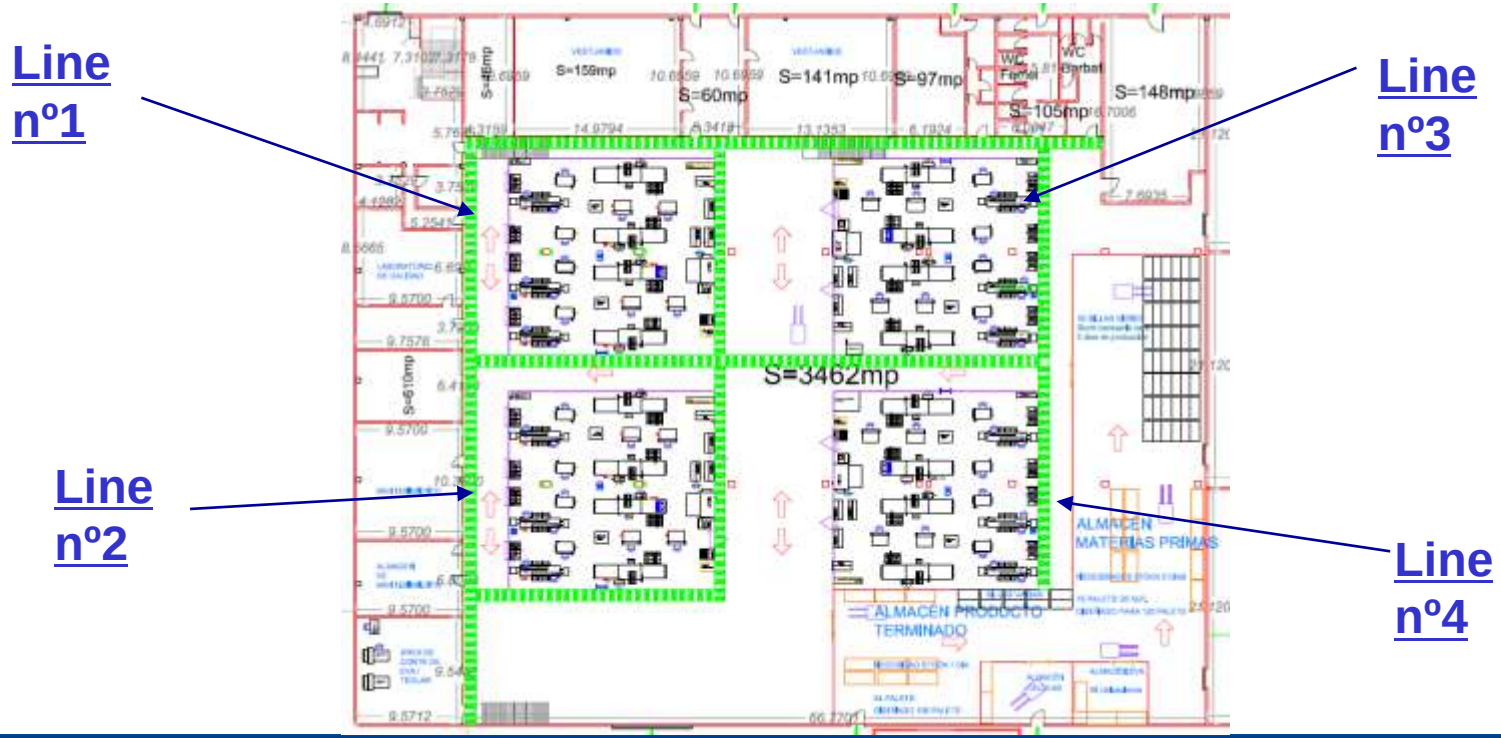
- Seven different buildings were visited.
- Only one building has been selected like the best: Previous Factory of GEOX, whose location is the following:

Lay out de la planta de Siliken (aprox. 10.000m2)



Description of the plant and project.

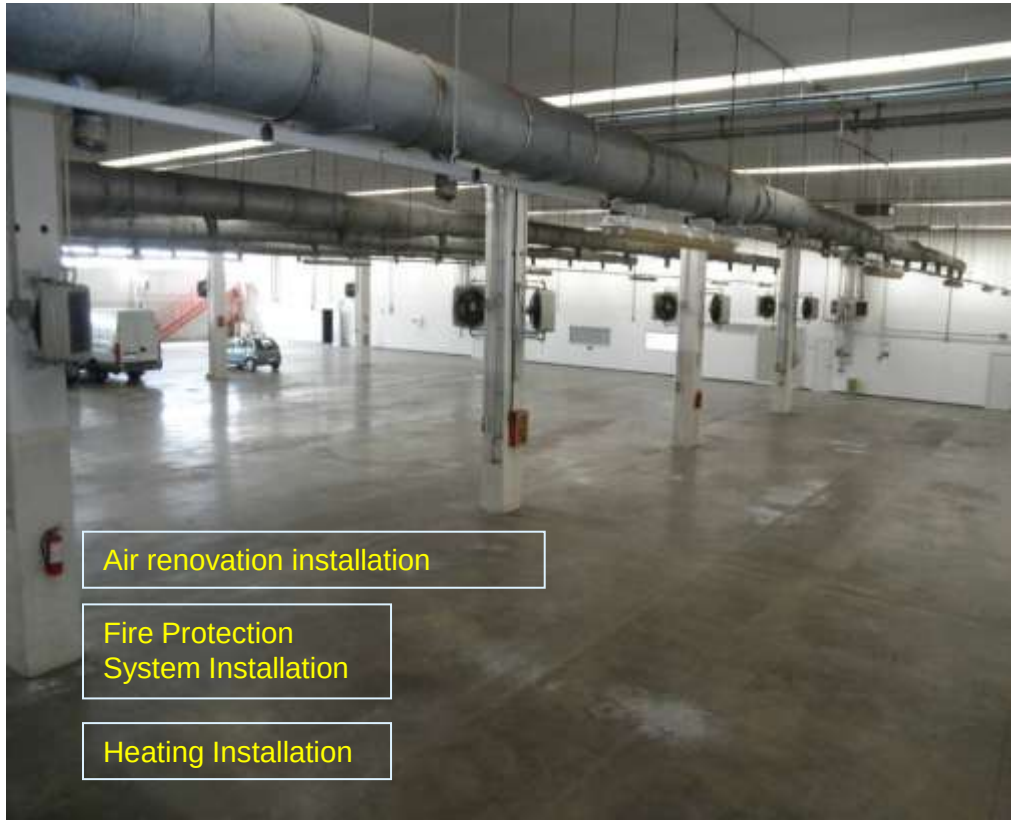
- **4 Production Lines** with a total production capacity of 50 Megawatts per year.
- the lines will be designed and built by Siliken in España
- Local direct labor: each line needs 14 workers per shift
- total employment: about 200 persons (working on 3 shifts)
- Possibility to use local suppliers for some of the components of the modules (glass, aluminium, junction box, etc).
- Transfer of know how regarding PV production line, PV Moduls, Qiuality Control, etc
- Possibility to increase by 4 lines the project

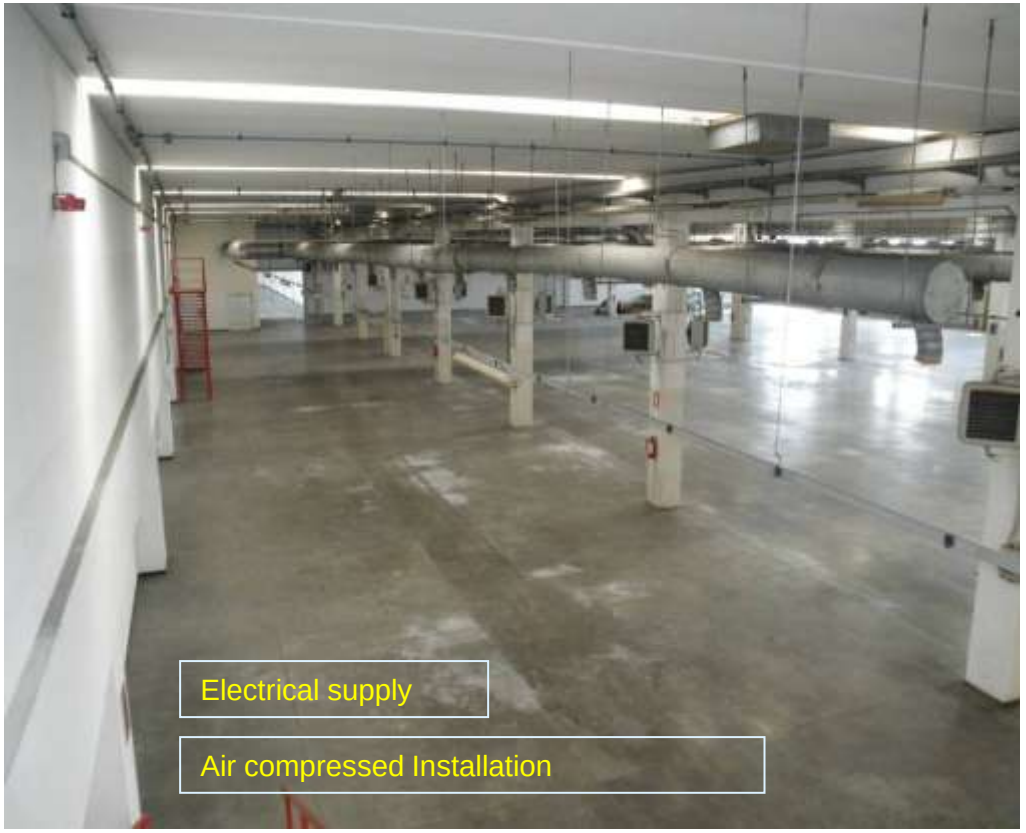


Siliken building

Valencia,

Siliken building





Presence control system

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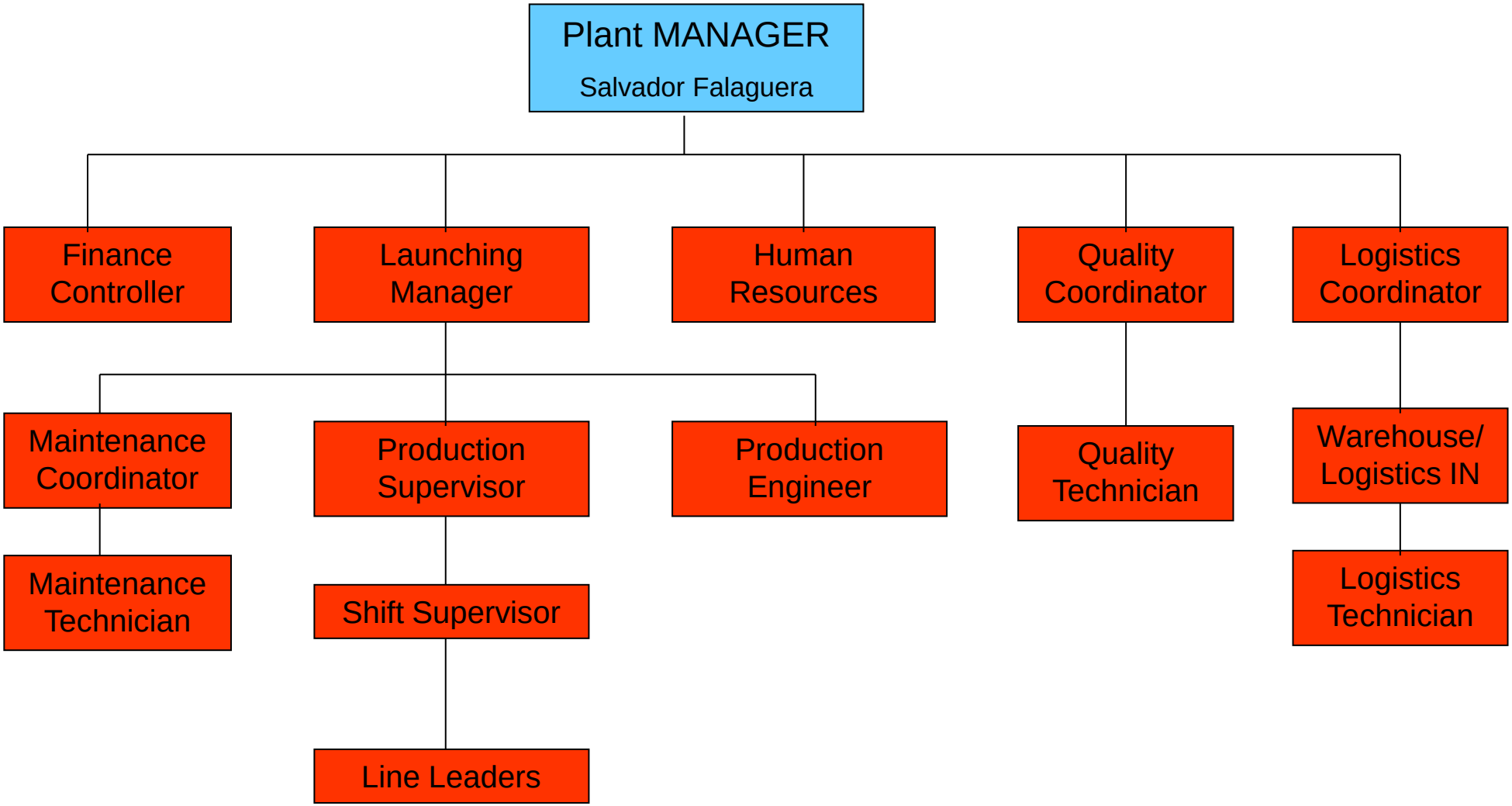
Operation Chart



Siliken Manufacturing RMN S.R.L. began production on February 28th 2011 at 6:00

Project to install a Solar Farm

- Various government agencies with whom we considered the possibility of developing and installing a Solar Farm of 200 MW as long as we receive help from the following agencies.

  Contact:ed Government agencies

  - Agenția pentru Dezvolatre Regională Timiş(ADR Vest).
  - Agenția de Dezvoltare Economico- Socială Timiş(ADETIM).
  - Consiliul Județean (CJ TIMIS).

  Suppor requested for the implementation of the Solar Farm of 200 MW:

  - 600 Ha of land under concession for free for at leats 40 years.
  - Connection to the main electrical source.

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CONCLUSIons

- the Spanish market has increased after being world liders

- In 2010 world market has dubbled

- Alternatives to keep developing:
  - Internalization and finding new markets and opportunities
  - Costs reduction in all links of the value chain
  - Quality
  - Differentiation

- We believe that Romania is a good opportunity for Siliken to increase production capacity and to reduce production cost eill make us more competitive with the Asian Producers.

- Great future potential, independently of the Spaniah market: World Market

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