



ABB Solar – SOLAR INNOVATION AND PATENT PROTECTION

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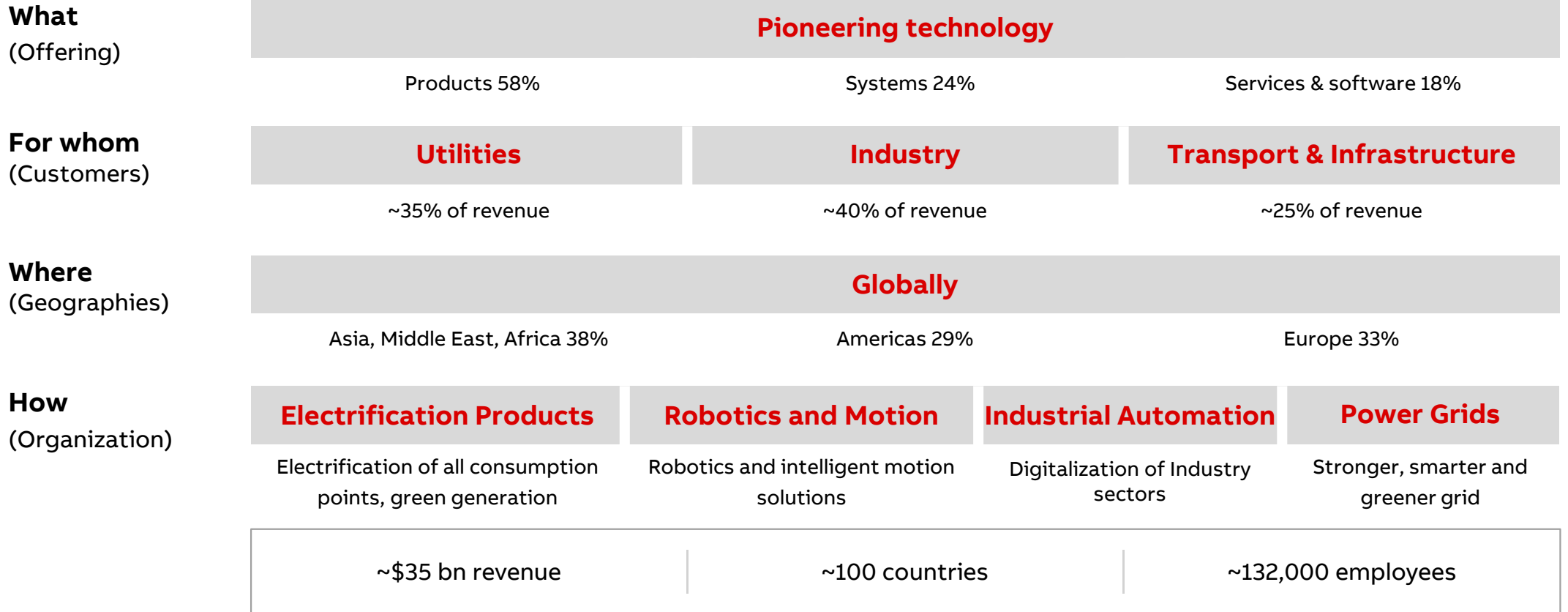


IP practice in Solar Business

Agenda

- **ABB and Solar**
- **ABB Solar IP practices**
 - **Technology development**
 - **ABB owned IP**
 - **Competitor monitoring**
 - **Solar related IP statistics**

Introducing ABB



IP practice in Solar Business

ABB and Solar

Investment in growth

Green sustainability

- Power generation
 - Solar / Wind
- Energy storage
- Electric vehicle charge infrastructure



Brand value

Company green image

- Solar impulse
- Formula-E



IP practice in Solar Business

ABB Solar product portfolio

Comprehensive offer of solutions

- **Residential**
 - Traditional PV
 - Integrated PV+storage
- **Commercial and Industrial**
- **Utility**
 - High power inverter
 - Integrated MV substations
- **Remote control and monitoring**

8GW/year of effective annual production



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Technology development

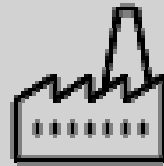
ABB research centers



3-10 years tech deployment horizon

- Technology mapping and validation
- Technology development to support business

Business led R&D



0.5-4 years tech deployment horizon

- Productization of prestudied technologies
- Product developments

University Co-operation



Technology monitoring/scouting

- Joint research of specific topics
- Technology scouting

Decades of know how development. Captive technology.

IP practice in Solar Business

ABB owned IP

Protection

Protect what we do or will do

- Secure current and future business of ABB
- Defend from risks of potential infringements by competitors

Enabling FTO

Protection in regards to market dynamics

- Secure penetration of new geo markets
- Protect technology deployment for regulatory standard changes

Portfolio

Broadening IP portfolio to prevent copying of

- ABB technology
- ABB's trademarks and design

Patent footprint mgnt

Make \$ count by selecting

- Target market geographies
- Geographies where competitors develop/produce/sell
- Strategy drive technologies

Freedom to operate and safeguard investment

IP practice in Solar Business

Competitor monitoring

Monitor
competitor to

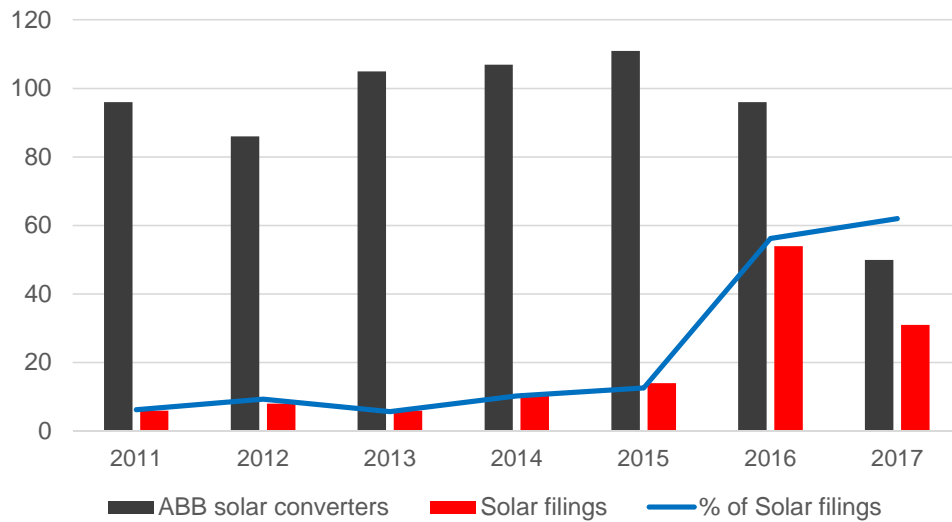
- 1 Make sure that competitor's IP rights are not violated in our product development
- 2 Make sure that competitors do not gain unjustified IP rights that would block ABB
- 3 Be vigilant for 3rd parties possibly infringing ABB patents
- 4 Know what direction the competition is heading to

The mantra of competitor monitoring

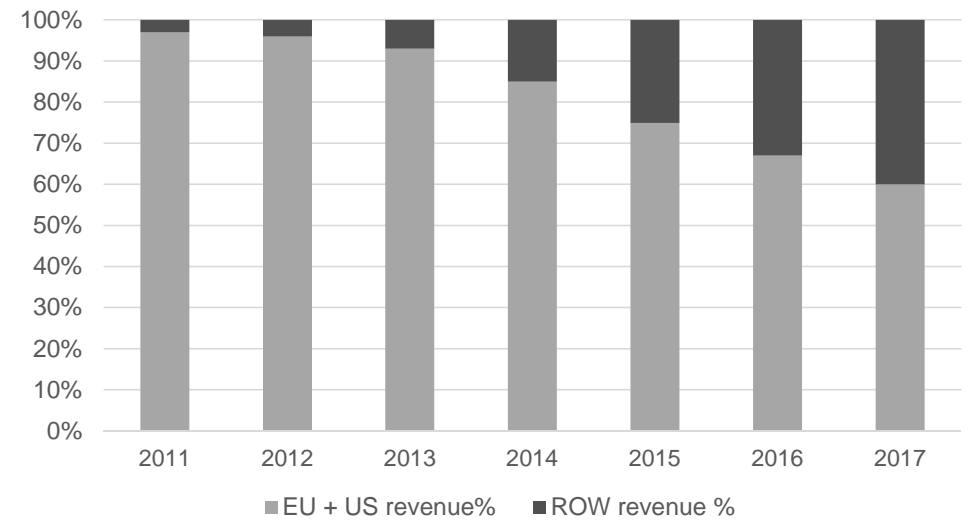
IP practice in Solar Business

ABB Solar IP statistics

Filing of converter business vs solar in ABB



% of sales revenue by areas



Growing IP effort in CCMT with market diversification

Conclusions

Protection of intellectual property is key to

- protect the company's technology
- guaranteed freedom to operate
- maintain early comer's market advantage

Effective IP practice implies an IP effort proportional to the company market exposure

- new technologies to address new requirements
- risk in new territories from new competitors

Competitor IP analysis as market intelligence tool

