

An aerial view of a city, likely San Francisco, with a network overlay of glowing blue lines and nodes connecting various points across the city. The background shows mountains and a blue sky with white clouds. The Siemens logo is in the top right corner.

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Smart Infrastructure Smart Campus solutions

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[siemens.com/smart-infrastructure](https://www.siemens.com/smart-infrastructure)

Journey from traditional to smart campus – Thinking beyond what is possible today

<2010

Traditional Campus



- Domain know-how (in silos)
- On-site solutions
- On-site services
- People/assets protected only on-site, in specific areas/floors

2010

Automated Campus



- + Fully integrated management stations and remote connectivity
- + Energy Efficiency
- + Single domain management stations (comfort, fire, ...)
- + Some remote connectivity
- + Information largely limited only when physically in the building

2020

Integrated Campus



- + Building twin
- + Remote connectivity & analytics
- + Fully integrated management stations incl. cross-domain (safety, comfort, energy)
- + Workplace Experience
- + Full situational awareness incl. multi-sites
- + People protected also outside buildings
- + Digitally enhanced services
- + Mobile applications, anywhere, anytime
- + Information on all devices, real-time

202X

Smart Campus



- + Simulation and artificial intelligence based on Building Twin
- + Intelligent management systems utilize advanced analytics and AI/ML to learn and self-adapt; fully embedded in smart buildings
- + Buildings/campuses connected to wider infrastructure (environment), full data exchange
- + Hybrid solutions cloud/on-premise
- + Beyond mobile apps, advanced dashboards
- + Computer guided intervention

Focus and challenges of main actors in a smart campus

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Owner/Investor



Security, reputation, ROI, sustainability

- Creating a strong identity and seamless integration into the existing environment
- Balance independent urban quarter/city integration
- Achievement of financial and sustainability targets

Planner/Developer



User satisfaction, resilience, regulations/laws, reputation, ROI

- Creating a user/owner centric, modern & high quality proposition
- Comply with relevant regulations/laws & avoid potential reputation flaws
- Achievement of financial targets

Operator



Transparency, low costs, flexibility, easy maintenance

- Ensuring optimal operation, around the clock
- Achievement of optimum energy efficiency
- Optimization of life cycle costs by minimizing maintenance/service activities

Occupant/Tenant



Attractive location, modern buildings, future-oriented infrastructure

- Providing optimal work/life conditions
- Ensuring the well-being and protection of people and assets
- Facilitation of land use and infrastructural integration

Customer/Visitor



Security, comfort, transport connections, experience

- Easy accessibility and full integration into the city infrastructure
- Modern mobility concepts
- Equipping visitors and customers with modern integrated tools for an extraordinary visitor/customer experience

Focus

Challenges

Smart campus domain providing the core value – Resilient, safe, energy-/space efficient, reliable, flexible & comfortable

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- Power Grid
- Med. Volt.
- Low Volt.
- Water
- Energy eff.
- Fire Safety
- Comfort
- Security
- IOT
- Mobility
- Financing

Consulting, Planning, Simulation and Services

Examples for Smart solutions

Distributed Energy Systems		Safety		Comfort	
Co-generation plants		Fire safety systems and services		Building automation systems	
On-site solar		Security systems		HVAC	
Battery storage				Lighting	
Micro-grid controllers				Mechanical and electrical services	
Energy efficiency		Asset efficiency		Smart spaces	
Energy monitoring and optimization services		Asset performance monitoring		Occupant engagement applications	
Guaranteed energy performance contracts		Predictive maintenance		Asset tracking	
		CloudFIMs and CloudOps		Smart lighting and shading	

Distributed energy solutions provide value with comprehensive lifecycle services and utilize the full breadth of technology



Resilient energy supply



Reduced costs



Improved sustainability

MindSphere
Building management
Energy management

Photovoltaics

Battery storage

H₂ storage

Combined cycle power plant

C(C)HP

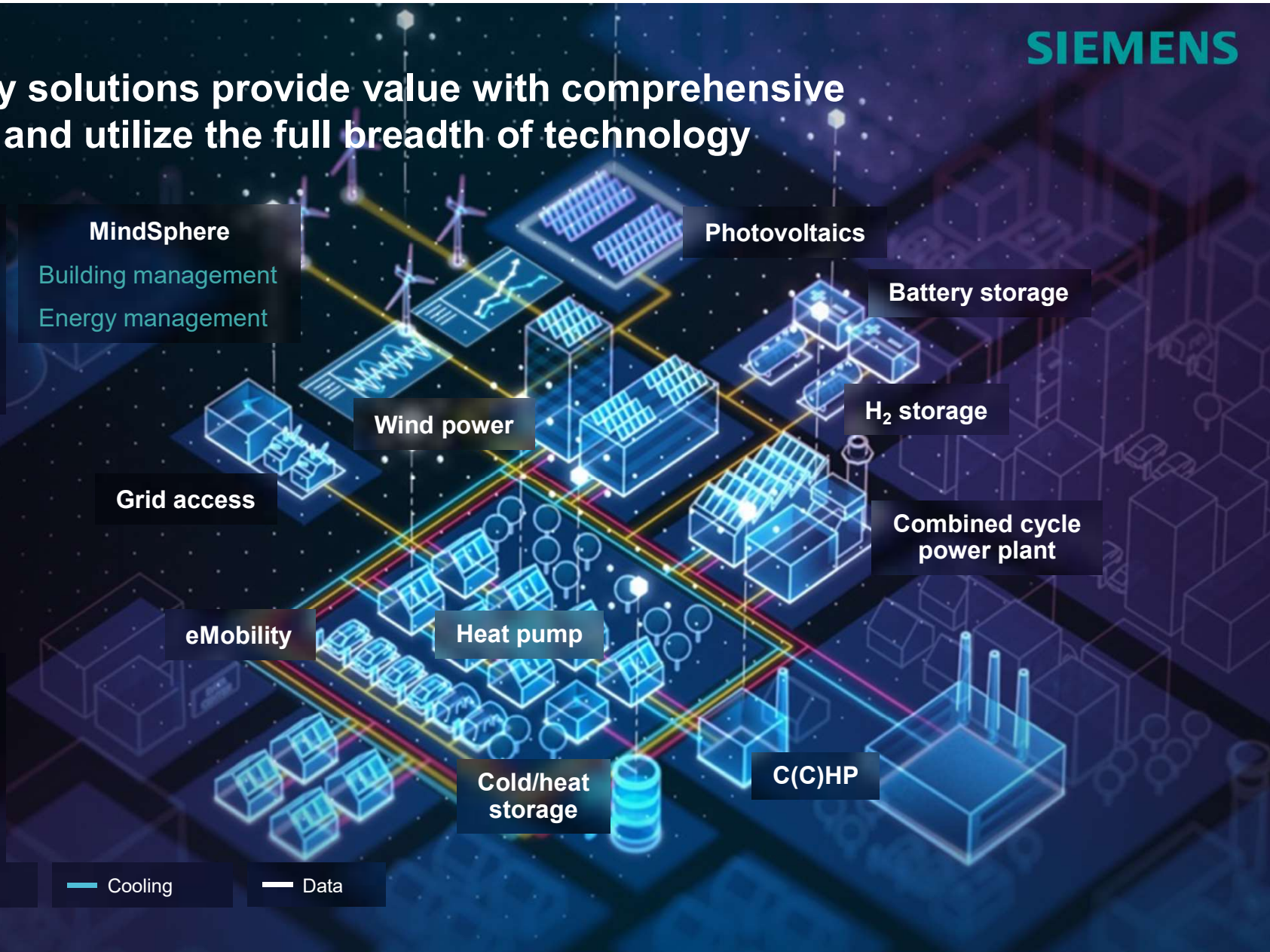
Wind power

Grid access

eMobility

Heat pump

Cold/heat storage



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