Innovation is in our DNA. Ever since the first brick was laid in 1993, the Amsterdam ArenA was the state-of-the-art stadium of Europe with its movable rooftop and multipurpose usage.
"The Amsterdam South East area is a unique location where mobility, sustainability, fan experience, security and urban farming are combined into an open innovation platform where development and testing of Smart Stadium and Smart City solutions can prosper."
BASIC INFRA STRUCTURE

FAN EXPERIENCE

CUSTOMER JOURNEY

SAFETY & SECURITY

SUSTAINABILITY

ASSET MANAGEMENT

Themes

Projects

MVPs (agile)

2018

+0.5 (1-10)

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+20%

++

++

-20%

90 days

90 days

90 days

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++

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90 days

90 days

90 days

...multiple projects.
AMSTERDAM ENERGY ARENA
INCUBATOR OF A NEW ENERGY

SHAREHOLDERS:

PROJECT PARTNERS:
Bouw van opslagbatterij (3 megawatt) in Johan Cruijff ArenA van start

In de Johan Cruijff ArenA is men gestart met de bouw van een opslagbatterij van 3 megawatt, bestaande uit honderden gebruikte Nissan Leaf-accu's. De energieopslagfaciliteit zorgt ervoor dat het voetbalstadion duurzaam opgewekte energie efficiënter kan gebruiken. Daarnaast zal ArenA de opgewekte energie gaan verhandelen aan partijen in de regio.
Grote stroomstoring Schiphol verholpen, vliegverkeer nog gehinderd

Als gevolg van een grote stroomstoring die zich voordeed in de nacht van zaterdag op zondag, is de luchthaven Schiphol enkele uren gesloten geweest. Rond 6.30 uur ging de luchthaven weer open en werden passagiers weer toegelaten. Wel hebben passagiers en het vliegverkeer nog last van de eerdere stroomstoring.
Amsterdam ArenA
Naturally sustainable

Average annual energy consumption:

- Electricity consumption +/- 8.500 MWh
  - 90% Wind Energy (7.650 MWh)
  - 10% Solar Energy (930 MWh)
- Gas consumption 10483 m³
- District Heating: 26.500 GJ (Capacity 3.5MW)
- District Cooling: 1.512 GJ
- Energy Controlling Online (real time insight in energy consumption)
PROJECTS

ENERGY STORAGE SYSTEM
V2G

FUTURE DEVELOPMENTS
Hub of the future
Energy grid South East
Open and shared energy system
More livable city by data
AMSTERDAM
ENERGY ARENA
CONSUMPTION ARENA

Graph shows power drawn from the grid. It is therefore net power usage, including solar production.

Meterdata Arena: Concerts and soccer games consume power to >3MW against normal usage 0.7 – 1.5MW
ENERGY STORAGE SYSTEM

Peak shaving to even energy consumption

Grid services for stable power supply

3 MW power and 2.8 MWh capacity

Further energy services to the neighbours

Increase self-consumption of solar power produced on the roof

Back-up power supply for Amsterdam ArenA during events

Load Management of car charging in the car park and V2G extension
PROJECT PURPOSE

PROJECT DRIVERS

• Efficiency
• Sustainability
• Reliability

REVENUE DRIVERS / SERVICES

• Backup
• Peak Shaving
• Grid Stabilisation Services
ENERGY STORAGE SOLUTION

- 4MW / 4MWh
- 9 Bidirectional Invertors
- 119 Battery Racks
- 1160 Battery Packs
- 12 Nissan Battery modules in a Pack
V2G & PEOPLE MOVER
PHASE 1

- 5-10 Bidirectional Chargers
- 5-10 Leafs / People Movers for V2G & Car Sharing

PHASE 2

- Launch Mobility as a service Concept such as a (V)VIP Shuttle Service
- And more!
HUB OF THE FUTURE

- Largest commercial building storage in EU
- 3MW, 2,8MWh 2nd and 1st life battery systems (~185 car batteries, ~300 households for 1 day)
- ~3mEUR investment
- 15 year project
- ~116 ton/CO2 reduction
- Further integration to energy hub, V2G and shared mobility

Source: The Mobility House AG
CONNECTING THE SOUTH EAST AREA

Source: The Mobility House AG
MORE LIVABLE CITY
BY GENERATED DATA

<table>
<thead>
<tr>
<th>Data set available</th>
<th>Data usage examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Energy and power data on</td>
<td>• Increase usage of renewable</td>
</tr>
<tr>
<td>consumer level</td>
<td>energy</td>
</tr>
<tr>
<td>• PV energy production</td>
<td>• Reduce grid load and peaks</td>
</tr>
<tr>
<td>• Storage data</td>
<td>• Develop energy sharing models</td>
</tr>
<tr>
<td>• Power quality</td>
<td>• Validate intelligent vehicle integration</td>
</tr>
<tr>
<td>• Frequency</td>
<td></td>
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<tr>
<td>• Vehicle charging data</td>
<td></td>
</tr>
<tr>
<td>• V2G information</td>
<td></td>
</tr>
</tbody>
</table>

Source: The Mobility House AG
OPEN AND SHARED ENERGY SYSTEM

Open interactive energy system

- Independent nodes
- Node specific business logic
- Decentralized market places
- Settlement and execution of power supply and demand trades
- Rule of lowest possible settlement path

Source: The Mobility House AG
MORE EFFICIENT AND SUSTAINABLE ENERGY SYSTEM

Supply and demand handled decentralized

1. Note initiates a request
2. Request gets relayed by decentralized market place based on business rules and constraints of each relay note
3. Node which can fulfill the request makes an offer
4. Offer gets relayed to the highest relay note
5. Relay node has to ask a service specific judge as multiple offer arrived
6. Judge decides and commands relay node to settle the deal between selected nodes
7. Selected nodes execute deal

Source: The Mobility House AG
INNOVATION
ARENA
ACADEMY
OTHER TYPE OF BUSINESS MODELS USING OUR INNOVATION ARENA ACADEMY

Spark 'n Ride
De ArenAardappel
Dance 4 Energy
ORGANISATIONAL ASSESSMENT

Thinking of scaling up in the very beginning of the design process

PRODUCT SCALE-UP READINESS

Initial Concept

Org. Capability

- Financial Ambition
- Market Propositions
- Clients & Channels
- Core Business Processes
- Operations & Infra Technology
- Integrated Governance
- People & Culture
- Resources & R&D
- Synthesis

step 1  step 2  step 3  step 4  step 5  step 6  step 7  step 8  step 9  step 10

GAP ANALYSIS ORGANISATIONAL CHALLENGES
EXPRESSED IN COSTS, REVENUES, IMPACT AND COMPLEXITY

READENIZED CONCEPT FIT FOR SCALE-UP

PREPARATION

DEVELOPMENT

MVP

90-180 days

THEMES

OPERATIONAL CHALLENGES

FAN EXPERIENCE

BASIC INFRA

CUSTOMER JOURNEY

SAFETY & SECURITY

FACILITY M’MENT

SUSTAINABILITY

ACADEMY INNOVATION ARENA
AMSTERDAM INNOVATION ARENA