



**linc**

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## Linc diagnoses building inefficiencies, pin-points maintenance problems, and maximises use of renewable energy.

- Simple, 30 minute install in **any residential, commercial, or industrial building** – existing or new.
- Spectral analysis and neural networks give an **appliance-level breakdown** of all energy use.
- **Power line communications** to connect with existing meters, sensors, and controllers.
- Built-in **controls** for building automation and demand response.
- Integrated Wifi and GSM for secure, **real-time data** connectivity at 1 second intervals.
- All-in-one **microgrid solution** for analytics and control of distributed energy resources.
- **92x cheaper** than existing alternatives, and **open-sourced** to ensure interoperability.
- Empowers **facility managers, energy consultants, and utilities** with a simple tool to optimise building operations and to implement high-impact retrofits.



**Linc is a foundation for the smart-buildings, smart-grids, and smart-cities of the future.**

# Use cases: Smart Buildings

## Residential

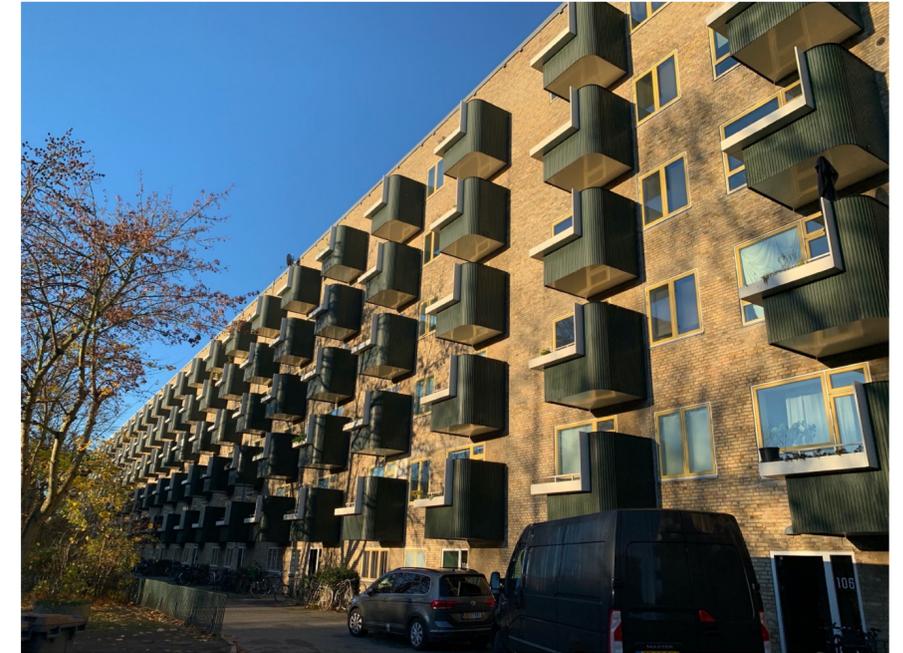
- **Social housing complexes:** Metering and appliance load disaggregation for up to 16 apartments per Linc device. Engaging residents and helping alleviate energy poverty.
- **Student accommodation:** Sub-metering energy use down to individual rooms, incentivising resource efficiency with gamification (and pizza lunch prizes).
- **Smart home services:** Complete digital platform for intelligent sensing and controls.

## Commercial

- **Energy savings:** 34% reduction on energy spend at Burger King restaurants by load shifting to off-peak tariffs, avoiding demand penalties, and identifying inefficiencies.
- **New business models:** Heat pumps, power-factor correction, and other equipment offered 'as-a-service' with full monitoring and control capability.

## Industrial

- **Predictive maintenance:** Intelligent fault detection and automated alerts.
- **Process-level monitoring:** Analyse operational performance and quantify resource use for individual production processes.

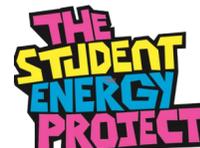


200-unit Storgården social housing complex in Copenhagen monitored by Linc.



Heat pumps as-a-service monitored by Linc.

### Clients and Partners



# Use cases: Smart Grids



## Positive Energy Neighbourhoods

- **Energy trade:** Time-synchronous monitoring of energy production and consumption across a low-voltage grid network allows community-level trade of renewables and storage capacity. Integrated billing blockchain for seamlessly transactions.
- **Validated:** Tested by EDF Microgrid R&D Lab in Paris, confirming >99% effectiveness.

## Demand Response and Grid Flexibility

- **Flexible loads management:** Dynamically to regulate flexible loads (EV chargers, battery storage) in response to real-time availability of on-site and grid renewables.
- **Virtual Power Plant:** Commoditise and trade aggregated energy flexibility.

## Grid Network Optimisation

- **Substation Monitoring:** 30-minute install of Linc hardware in MV-LV substations digitises power flows and harmonics for all circuits, and measures transformer temperature to ensure safe and stable operations at all times.
- **Unlock existing grid capacity:** Monitoring and alerts allow for grid networks to operate safely closer to their limits, accommodating increasing electrification.



Actual results of EDF Lab Microgrid Testing



Linc Substation Monitoring Kit

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# Use cases: Smart Cities

## Municipal-scale Facility Management

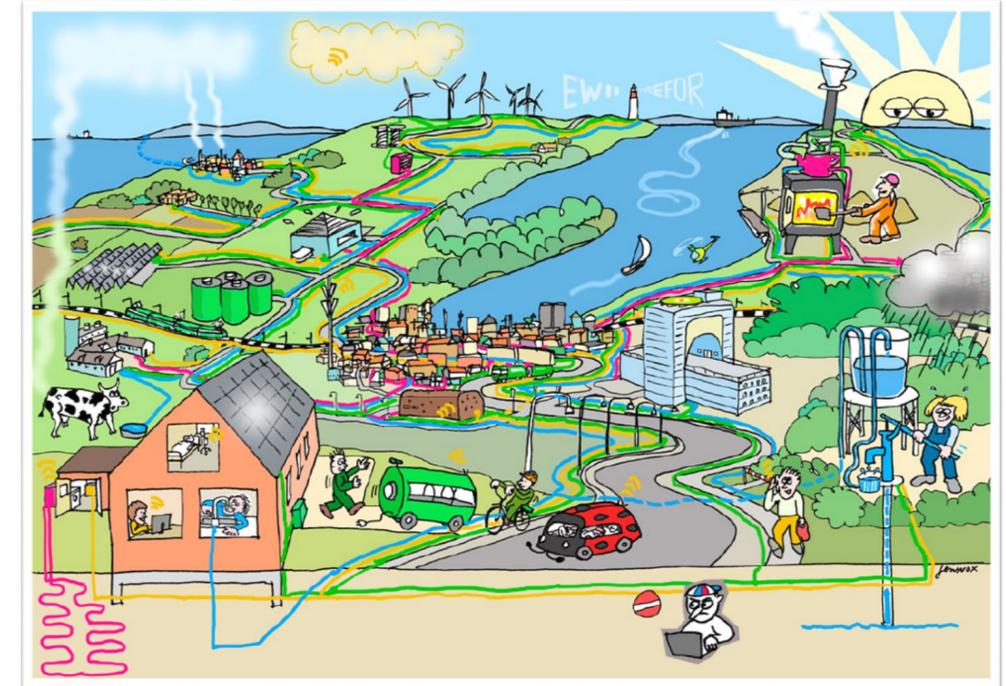
- **Centralised Overview:** All municipal hospitals, schools, libraries and other public buildings reporting real-time operational and resource parameters (energy, water, gas, HVAC, etc) to benchmark and prioritise retrofits based on clear ROI.
- **Efficient Maintenance:** Reduce cost and increase efficiency with alerts for fault detection and predictive maintenance. Despatch facility staff on-demand.

## Integration with Urban Services and Infrastructure

- **Municipal EV Fleet Charging:** As implemented in Porto, regulate charging stations of municipal buses and other EVs based on availability of surplus renewables.
- **Public Data Sets:** Combine building data with weather, air-quality, traffic, and other sources to build better digital tools and services for citizens.

## Open Source and Standardised for Replicability

- **Open Data Model:** Linc created OASC and FiWare data models for building analytics.
- **Extensive Pilots:** As part of H2020 Synchronicity program, deployed Linc smart-city solutions in Porto, Milan and Carouge.



Representation of a digital multi-utility grid deployed in Kolding, in partnership with EWII.



Municipal EV fleet charging station in Porto monitored by Linc.

Clients and Partners



# Conclusion



**Linc is on a mission to make clean, energy efficient systems to all.**

- **Most advanced, flexible, and inexpensive** solution for building energy management.
- **Proven results** in creating jobs and markets that lead to reduced energy spend and carbon emissions.
- **Highly scalable** technology and business model for global impact.
- **Fully-functional** product validated by commercial traction.
- **A committed team** of domain experts with a long-tack record of success.

