Using innovation and technologies to make complex things simple and thereby create the energy system of the future.

TU Delft SET MSc Thesis subjects.

Stimulation of innovation.

De Energiebespaarders is a scale-up based in Amsterdam. We are the largest online platform that provides installation as-as-a-service to residential households. Our turnkey solution helps homeowners to make their home more energy efficient. We sell insulation, solar panels and heat pumps including financing.

Our mission is:

"Reducing the impact on Earth for the generations to come by making energypositive living accessible for everybody"

We do this by:
Our team consisting of 20-30 bright minds is a mix of engineers, software developers, designers, psychologists and business developers. Our ambitious team accelerating the energy transition and with this we are realising a quarterly growth of 40%.

Join us to shape the energy system of the future.

Send your CV and a short motivation to management@energiebespaarders.nl

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Why would you do your master thesis at De Energiebespaarders. What are the benefits?
- Innovative ideas which will directly be implemented to increase the speed of the energytransition.
- Insights in projectmanagement, the opportunities and challenges which are faced by a sustainable Scaleup..
- Possibilities to work out pilots in local communities via the nationwide network of De Energiebespaarders.
- Possibilities for field-experience with local installers to see theory put into practice.
- An enormous pile of data of private home-owners to create a very precise model.

Flex energy
1. What is the most suitable flex model (e.g. open.adr protocol) for an aggregator like De Energiebespaarders to deliver services to building owners for automated decision making regarding power demand and supply?

Energy exchange
2. How do we build a new online energy exchange where electricity, heat and cold can be traded peer-to-peer as well as on a wholesale market with standardised bots based on your energy consumption pattern, restraints and agenda?

Heatpumps and control of a set of residential heatpumps in a microgrid
3. How can an aggregator of heatpumps offer flexibility services to a USEF compliant market at a distribution level?
4. What piece of hardware that works via an open source protocol (e.g. https://www.home-assistant.io/) can be a universal interface for connecting with heat pumps in order to control their operation in a distributed microgrid?

Energy storage
5. *(home)batteries worth installing* - A model which analyzes which demands (cost, capacity etc.) of batteries are required to make it suitable for the market of private homeowners.

Thermal energy storage and generation at residential block level
6. *Collective heat pump modules within a residential block* (eg 16 houses). How do you dimension these heat pumps efficiently and what position should it occupy in the local grid? How can you make a good cost price indication with limited input? In what way can local prosumers be connected in a way that leads to a positive impact on the local grid congestion instead of negative.
   a. Cooperation with TNO and a possible DSO.
7. *Collecting data for a collective solution* - What data of the built environment do we need to calculate the turning points of the economic benefit of a collective heat solution?

8. *Heat networks; high and low temperature.* What is the required size and material of pipes? How do you dimension a residential area, with all the necessary data; e.g. insulation values of the entire house, different heatdistributionsystem. Each house is a block of data that can be placed in the system. How do you prevent capacity shortages in cold winters and prevent unnecessary capacities in the summer?

Monitoring - Microgrid - Distribution systems- Smart grid

9. (Microgrids) How to build an open source monitoring platform where different suppliers and equipment manufacturers of smart thermostats (e.g. Plugwise, Toon, Nest, Honeywell) and smart meters (Schneider Electric, ENI, ABB) and gateways

Energy Performance of a single household

10. *Energyperformance calculation model -* Creating a model where the influence of one insulation measure on the benefits of other measurements is taken into account. Simulate your complete house with this easy tool.