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Short Communication

Sustainable Corporate Governance using the Example of a Self-Sufficient Energy System

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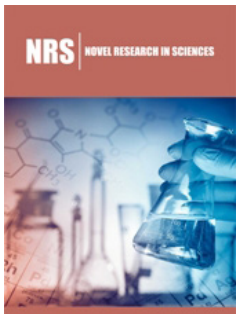

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Introduction

Society is facing major challenges today and they affect all actors worldwide: issues such as climate protection, scarcity of resources, demographic change and upheavals in the world of work are increasing the pressure, especially in industrial companies, to act sustainably. In particular, politicians and society now increasingly expect companies to take responsibility for their actions and their impact on society. This means that companies must also act responsibly and sustainably „beyond the narrow boundaries of the company" and „into overlapping socio-political fields of responsibility" [1]. In addition to economic success, sustainable management also pursues ecological and social goals within the company, in the corporate environment and in society as a whole [2].

The topic of self-sufficient energy supply for companies plays a very important role in this area. Sustainability is often understood to mean, above all, the ecological orientation of corporate or political decisions. In this light, the sustainability of energy supply in Germany is often discussed very critically. However, if one expands the understanding of the term beyond the field of ecology, it becomes apparent that sustainability is at least partly inherent in energy supply: Grids and generation plants have lifetimes of several decades and thus require planning based on the long term [3]. This is precisely where a rethink is currently taking place at high speed.

Against this background, however, many small and medium-sized enterprises are confronted with rapid changes in society, energy industry regulation, changing technologies and a growing competitive landscape.

Self-sufficient energy supply is not just a separate field of action, rather it makes sense to look at it as a whole. Industrial enterprises in market economy systems are generally committed to the original operational target system with the profit target as the core priority [4]. Initially, the sustainability goal does not change the core goal of profit maximisation. Rather, it is a matter of integrating sustainability as complementarily as possible into the target system of industrial companies. There are a number of parallels here with regard to the company sub-goals, such as high product quality and resource-conserving use of raw materials. These sub-goals also have profit-increasing or cost-reducing effects.

In other words, it is about „bringing together" the goal of increasing value in the individual economy with the value-oriented social goal of achieving added value for society as a whole, which also includes sustainability [5]. In short, the new formula is „profit and sustainability" instead of „profit or sustainability". Or as it is aptly stated in Daimler's Sustainability Report 2018 [6]: „Our most important corporate goal is to grow profitably in a sustainable manner. Of particular importance is the short- or long-term orientation of the relevant operational targets, such as cash flow, return on investment and EBIT [7]. Sustainability is per se long-term oriented, e.g. due to the inherent generational reference.

Companies often find themselves in a latent dilemma situation: shareholder-related short-term and continuous profit generation is often only compatible to a limited extent with sustainability activities that often only increase value in the long term, but have a cost-relevant impact in the short term. The increased orientation towards stakeholder value, which is also

in the long-term interest of shareholders who provide capital and expect returns, can promote the necessary reorientation towards long-term, sustainable thinking, which can also produce period-relevant results, e.g. in energy savings. Sustainable thinking does not exclude short-term results.

In principle, the starting points for sustainable management in industrial companies can be found in almost all functional areas. In the energy sector, one approach is the creation of a complete system for the demonstration of self-sufficient hydrogen use. Here, a „green" system is to be created that is able to temporarily store electricity with the help of the conversion of water to hydrogen. The energy is released via a downstream fuel cell. The concept is shown in Figure 1. The planned system is to be self-sufficient, have an electrolyser and a as its basic pillars, hereinafter also referred to as Autark-Elys. Autark-Elys consists of an electrolyser and a fuel cell as individual components which, when connected together, form a complete system. In a first step, a system with a nominal electrical fuel cell power of max. 200 to 250watts and a continuous operating power of 100 to 200 watts is to be designed. In a further step, the system is to be scaled up to 1KW output. If necessary, even larger systems will be created at a later stage.

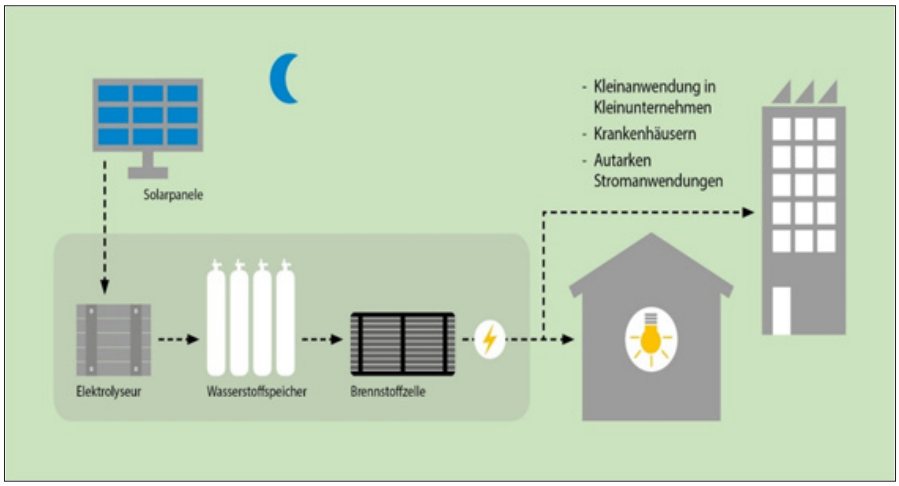

Figure 1: HConcept of the Autark- Elys plant.

The individual components can be seen in the illustration and thus represent the core components of the system. The electricity is generated by a solar panel. The electricity is then stored in the form of hydrogen and, if necessary, fed back into the power grid via the fuel cell. The demand is enormous, not least due to the change towards sustainable management described at the beginning, because the markets are currently changing at an unprecedented speed. For this system, two areas are considered as target markets. On the one hand, owners of single-family homes are to be enabled to regulate their electricity needs completely autonomously. On the other hand, law firms and Small and Medium-sized Enterprises (SMEs) should be able to maintain their business operations autonomously (Figure 2). Among small and medium-sized enterprises, the need for self-sufficient power supply is very great, especially in the IT areas. This project is funded by the state of Brandenburg under the „Profit" measure (funding code 80257166), for which the Eisenhuth company, Wildau site, would like to express its sincere thanks. The funding is co-financed by the European Fond Regional Entwicklung (EFRE).

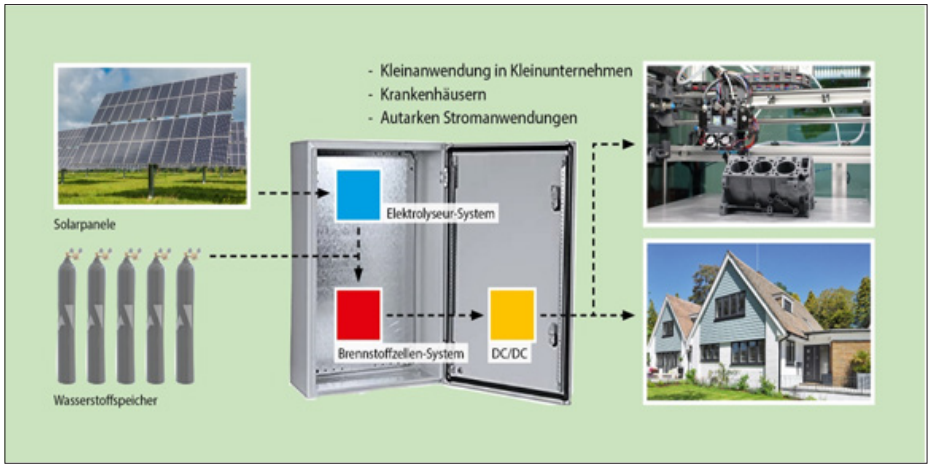

Figure 2: Overall circuit of the self-sufficient energy system as a control cabinet system (Autark- Elys plant).

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