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Incentivising pro-circular behaviours: proposing a new enhanced capital allowance scheme for remanufactured products - the case of refrigerated display cabinets in the United Kingdom

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Abstract

A number of behavioural barriers are preventing the development of a Circular Economy in the retail refrigeration sector and it is possible, that financial incentives could help to overcome them. Using Refrigerated Display Cabinets as an example, this paper aims to encourage dialogue between manufacturers and policymakers about developing a new Enhanced Capital Allowance eligibility scheme for a variety of remanufactured product groups. This could be pivotal in encouraging the industry to become more resource-efficient and pro-circular.

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1. Introduction

Refrigerated Display Cabinets are used to stock and display chilled, frozen food and beverages in retail grocery stores. Cabinets commonly remain in use for 5 years (first lifecycle) before being disposed of and replaced by new units. Some businesses take a resource efficient approach by cosmetically refurbishing their Refrigerated Display Cabinets. However, there is potential for a cabinet to remain in use for as long as 15 years across 3 life-cycles [1]. This is providing they are originally manufactured to a good standard, more extensively refurbished at the end of their first lifecycle and remanufactured at the end of their second lifecycle. Remanufacture however, is seldom practiced in the retail refrigeration industry. It has the potential to be a driver of the Circular Economy and a key strategy in ensuring cabinets reach their maximum utility and lifespan.

The Circular Economy model is underpinned by a variety of theories and disciplines that aim to reduce waste and raw material consumption in the manufacturing process. The manufacture of cabinets is typified by the extensive use of materials and energy, meaning that the development of a Circular Economy in this sector is particularly important. Despite the economic and environmental benefits of remanufacture, the Circular Economy still remains underdeveloped in the retail refrigeration industry. This is illustrated by the amount of waste generated, for example the latest figures show that in 2015 over 68,833 remanufacturable cabinets were disposed and replaced by new units [2].

Fiscal incentives could help prevent the number of Refrigerated Display Cabinets from entering the waste-stream. At present the UK Government uses the Enhanced Capital Allowance (ECA) scheme to incentivise the purchase of sustainable products. The Enhanced Capital Allowance scheme was introduced in 2001 to encourage businesses to reduce resource consumption by procuring and using both energy-saving and water-efficient products. In the retail refrigeration sector, the scheme is known to support the purchase of new environmentally friendly Refrigerated Display Cabinets on the Government's Energy Technology List (ETL). With the scheme incentivising the purchase of new products only, remanufactured cabinets that could similarly help businesses reduce resource consumption are excluded from it.

The Enhanced Capital Allowance scheme has the potential to make the manufacturing sector more resource efficient. This paper proposes the extension of the scheme to include a standard to make remanufactured Refrigerated Display Cabinets compliant under the Enhanced Capital Allowance scheme.

2. Remanufacture of Refrigerated Display Cabinets (RDCs)

The Centre for Remanufacturing and Reuse (CRR) predicts that in 2015 there were approximately 832,000 Refrigerated Display Cabinets in UK grocery stores and that only 12,147 out of 80,980 end-of-life Refrigerated Display Cabinets were reused [2]. Based on these estimates over 68,000 potentially remanufacturable units entered the waste stream.

There has been very little focus on sustainable innovation in food refrigeration since the introduction of Refrigerated Display Cabinets in the 1930s. As a result, the design of cabinets has not changed very much throughout the past decades. The redesign of Refrigerated Display Cabinets with future remanufacture in mind is key to prolonging their lifespans. Should manufacturers take an approach to design that emphasises easy-disassembly, long-life materials and components, then less cabinets will be subject to disposal. This however is equally dependent on product owners showing an inclination to remanufacture and being aware of the economic and environmental benefits of the approach.

Part of this can be achieved through educating product owners on what the remanufacturing process entails and differentiating it from refurbishment. Muranko et al. [3] define the remanufacturing of Refrigerated Display Cabinets as: "A process of manufacturing finished goods that meet a customer's expectations or specifications, where at least 50% of the materials and components are sourced from the core of end-of-life product(s). As a result an end-of-life product (cabinet) is returned to a "good-as-new" or better state, with a warranty equivalent to that given for a new product (cabinet). The process of remanufacturing always takes place in an industrial set up, where a division of labour supports a large scale manufacture". It is important to emphasise that remanufactured cabinets are starting a lifecycle

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