

Mass Balance – The Chemical Industry’s Transition to Circular Economy

Abstract for “Renewable Materials Conference 2023”

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A Circular Economy aims to decouple growth from resource consumption and is regenerative by design. For the chemical industry one important pillar is to rethink the origin and design of resources and to keep them in use as long as possible. In addition to new business models, and new material cycles, renewable and recycled feedstocks from sustainable sources can support in closing the loops. The pressing issues like climate change demand a transition which is efficient and fast. Therefore, a range of different approaches to redesigning products and processes towards more sustainable solutions is needed, some of which may become effective earlier and enable the transition to circular economy, until new technologies and assets will be established at the necessary scale. A so-called mass balance chain of custody is an example for a pragmatic approach to speed up the transition to products derived from such circular feedstocks for all market players. Using a certified mass balance approach, sustainably sourced circular feedstocks can replace fossil feedstocks in existing efficient, complex, and interlinked productions systems. The resulting quality and properties of the products can be maintained, while greenhouse gas emissions and fossil feedstock inputs are being reduced. The presentation will reflect on opportunities and challenges for the transition to a circular economy resulting from mass balance and alternative chain of custody systems. Recent use cases from industry will be presented and discussed regarding their effectiveness in ramping up the switch to alternative raw materials.

Key words: circular economy, mass balance chain of custody, fossil resource savings, product carbon footprint