CAM DIE COATING SYSTEMS

TECHNICAL FIELD

The present disclosure relates to die coating systems including one or more rotatable cams inside a die body and methods of using the same to coat various shapes.

BACKGROUND

Available die coating systems rely on highly accurate and stable die geometry and fluid delivery to produce stable coatings. Starts and stops of the coating as well as width changes may lead to non-uniform coatings. Many products begin as a continuously coated web and are cut down to their final form in a converting process such as rotary die cutting or laser cutting. The weed from the converting process is often not directly reusable and is thus waste. Various die coating techniques are described in, for example, U.S. Patent Nos. 5,750,159 (Delmore et al.) and 6,464,785 (Puffe), and U.S. Patent Application Pub. No. 2013/0327269 (Suhara).

SUMMARY

Briefly, in one aspect, the present disclosure describes a coating apparatus including a die body having an inner wall defining a bore and a dispensing opening extending along a cross direction. At least a portion of a cam is pivotally mounted within the bore. The cam includes one or more recessed areas formed into a peripheral surface of the cam. The recessed areas of the cam is capable of intersecting with the dispensing opening of the die body to form one or more fluid connection regions. A seal plate is attached to the die body and configured to provide sealing engagement therebetween. The seal plate includes an opening aligned with the dispensing opening of the die body. The peripheral surface of the cam is in sealing engagement with the seal plate to at least partially block the opening of the seal plate, and the cam is rotatable about a central axis thereof within the die body to vary the fluid connection regions such that a width or shape of a dispensed fluid coating is dynamically changeable.

In another aspect, the present disclosure describes a method including providing a die body including an inner wall defining a bore and a dispensing opening extending along a cross direction, and providing a cam having at least a portion being pivotally mounted within the bore. The cam includes one or more recessed