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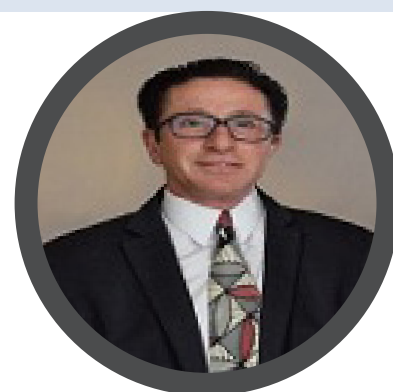
UTILIZING THE SPINNING TUBE IN A TUBE (STT®) REACTOR IN FLOW CHEMISTRY

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A review of the design process used to incorporate a patented spinning tube in a tube (STT®) reactor into a continuous pharmaceutical process for the manufacture of multi-component, single-pass, 2-aminothiophene derivatives is presented. Also the role and utilization of ChemCad® process simulation software and its integration with Comsol® computational fluid dynamics (CFD) modelling will be discussed. These results will demonstrate the advantages of using the STT® reactor in a continuous flow application in pharma applications. In addition to the benefits gained in discovering new approaches to chemical reaction synthesis, this continuous flow reactor can accelerate reaction rates by up to 5,000 times in some cases and can handle slurries, gas-liquid reactions, and liquid-liquid reactions. Applications to optimizing continuous pharmaceutical applications in the real world will also be discussed.



Biography

Rocky C. Costello, PE, is the president of R.C. Costello & Assoc., Inc. an engineering firm specializing in chemical process engineering. They provide engineering design services to the specialty chemical, chemical and pharmaceutical industries. He obtained his Bachelor's degree from Youngstown State University in 1974 and did further graduate work in Chemical Engineering at Manhattan College in the Bronx. He worked in private industry prior to starting the engineering firm. At Owens-Corning he worked in polymers and plastics, at Rhodia (Now Solvay) he worked in specialty chemicals and pharmaceutical intermediates. At Southdown environmental he was in charge of the Mexican and Californian operations for the recycling of waste solvents into pure solvents for reuse by fractional distillation and thinfilm evaporation. He holds numerous patents and has been published in a number of chemical engineering publications. He is a licensed professional Chemical Engineer in a number of states. His major interests include the design of continuous pharmaceutical plants (Flow Chemistry) utilizing unique unit operations such as the Spinning Tube in a Tube (STT) reactor and the Fluxion separator. A second interest is the computer modeling and simulation of Flow Chemistry processes utilizing ChemCad simulation software.

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