








PET Tracers

MPR Designs Auto-Loop™ System for the Labeling of PET Tracers

Practice Areas

-  Medical Devices
-  Diagnostics
-  Laboratory Instruments
-  Analytical Instruments
-  Biotechnology
-  Pharmaceuticals

Product Types

-  Durables
-  Disposables
-  Packaging

Service Areas

-  Research and Development
-  Voice of the Customer
-  Conceptualization
-  Proof-of-Concept
-  Detailed Engineering
-  Industrial Design
-  Design for Manufacturing
-  Supply Chain
-  Regulatory
-  Intellectual Property
-  Scale-Up
-  Fundraising
-  Device Certification

CHALLENGE

A leading supplier of products for radioisotope detection and analysis in life science, pharmaceutical and nuclear medicine research applications challenged MPR to design a new system for the labeling of Positron Emission Tomography (PET) tracers, including C-11 methylations and F-18 fluoroalkylations. The product needed to follow the client's flexible product strategy, be easy to use, maintain and clean, cost and reagent efficient, and consistent in product yield – all areas of concern with other C-11 radiopharmaceutical systems that typically have been manually prepared.

SOLUTION

MPR conducted simultaneous hardware, software and fluidics design work on the project to prove the underlying technology. An initial prototype to validate the system's commercial design, using companion cGMP compliance-ready system software, was created in less than three months and previewed at an International Society of Nuclear Medicine conference.

RESULTS

MPR engineers created an automated, integrated hardware and software platform that generates consistently high product yields and a cleaning turnaround time of 30 minutes or less. The resulting device leverages the client's PET Chem/Series hardware and software family, enabling key functions to be shared. Built-in radiation detectors enable real-time monitoring of radioactivity in the system and waste streams. Users can easily view the labeling process using real-time display features on the device software. Collaborating with the client, MPR took the project from a university lab concept to successful commercial product in 18 months, with an international patent awarded for the design and application of this first-of-its-kind Carbon-11 based radiopharmaceutical synthesis system.

TIMELINE 18 Months

