Name of Project: Paint Quality Test Equipment Development

Abstract:

Axalta Coating Systems is a leading global coatings company dedicated solely to the development, manufacture and sale of liquid and powder coatings. Axalta develops, manufactures and sells a wide selection of performance and transportation coatings around the world. Our customers range from among the largest, global original equipment manufacturers (OEMs) to small, family-owned businesses. They each have one thing in common - the promise of Axalta quality.

We focus considerable effort in understanding what is required to produce flawless coatings. Even tiny amounts of contaminants can disrupt the quality of the finished paint layer. This requires accurate replication of many experimental variables within designed experiments. Currently when performing certain tests our scientists hand micropipette 50-70 individually measured drops of contaminant into a grid pattern onto a test plate (12 inches x 18 inches). A carrier solvent is evaporated, the test plate is sprayed with the test coating and evaluated. The current process is time intensive and suffers from a higher than ideal variance between individuals.

Students on this team will develop an accurate, efficient dispensing system to seed a grid pattern of contaminants onto the test plate. Solutions may include improving the existing manual syringes, or exploring new ideas, such as fine step motors, nanodrop systems, acoustic dispensers, screen printing etc.

Scope:

Baseline Goal

Document the process capability of the status quo system, evaluate user needs and develop a variety of solution concepts that could deliver desired improvement in lower variance and shorter process time. Develop a rough prototype for at least one of the most promising solution concepts.

Expected Deliverable

Deliver an improved end-to-end prototype. Validate the prototype defining repeatability and reproducibility, and process time reduction for the most common contaminant test material utilized by the researchers.

Potential Stretch Goals

- Student designed test equipment/method is implemented as new standard operational testing method
- Prototype equipment is proven accurate for a wide range of potential contaminant materials
- Process time is reduced to less than 15 minutes with acceptable accuracy

Student Skills:

Project Areas	Key Skills and/or Knowledge	Likely Majors
Mechatronics (3-4 Students)	Strong design and CAD skills (essential), strong machining/fabrication skills (essential), Mechatronics (actuators/sensors)	Mechanical Engineering
Embedded Systems Integration (1-2 students)	Working with embedded systems, firmware/software development, electronic system integration.	Computer Engineering Electrical Enginering
Material Handling (1-2 students)	Chemical properties of materials. Material flow, control and measurement.	Materials Science Engineering Chemical Engineering Chemistry Physics

Additional Desired Skills/Knowledge/Experience

Any of the following Skills, Knowledge or Experience would be valuable to the 2019 team. We don't expect students to be familiar all or even most of these items, but strong candidates will have familiarity or experience with some of them and a positive attitude to learn what is necessary as the project gets underway. Please highlight your experience with any of the items on this list in your personal statement on the application.

- Team based project work
- Design/Build experience
- Experience with any fine measurement technologies
- Mechatronics
- Experience working in a chemistry/laboratory research environment

Location:

Work will take place on north campus. Students work with Axalta's research labs to better understand the user needs. There will be opportunities for on-site visits throughout the project (MDP will provide transportation).

Sponsor Mentor:

Gary Weaks is the Quality Manager of one of Axalta's largest global manufacturing sites in Mt Clemens, Michigan. He is a Chemical Engineer by trade with over 30 years of experience in the coatings business with various roles in both Technology and Operations.

Faculty Mentor

Prof. Grant Kruger

Legal Requirements:

- This project is open to all students regardless of citizenship status

Intellectual Property Agreements / Non-Disclosure Agreement Requirements

- Students will sign the standard MDP IP/NDA agreement

Internship Information (please select)

- Interviews for a summer 2019 internship are guaranteed for all interested students

Company Information:

Singular focus on providing brilliant coatings sets us apart. Axalta Coating Systems is a leading global coatings company dedicated solely to the development, manufacture and sale of liquid and powder coatings. We provide a range of performance and transportation coatings for manufacturers of light and commercial vehicles, the refinish aftermarket and for many industrial applications. Our innovative products and services include paint, color matching tools, application technologies and customer training, support and business management systems.
Our scale ensures we can deliver innovative coating systems around the world.
Fast Facts

150 years in the coatings industry
38 manufacturing facilities
4 global technology centers
30+ country technology laboratories
46 customer training centers
Doing business in 130+ countries
100,000+ customers many with multiple facilities
4,000+ distributors
More than 12,800 employees
1,300+ scientists, engineers and technology staff
1,000+ patents
2015 net sales of $4.1 billion

Headquartered in Philadelphia, Axalta manages its business in five regions servicing North America, Latin America (including Mexico), China, East and South Asia, and Europe, Middle East and Africa.