

Center for Packaging and Unit Load Design

CPULD News

Quarterly Newsletter

Where Are They Now?

Previous students were happy to share their stories with us and encouraged those currently studying with the center to apply for the internships available!

Starting last fall, we reached out, requesting life updates from previous interns, workers, and both undergraduate and graduate students. As usual, our students have been extremely helpful!

They were happy to share their stories with us, including what aspects of their life in the center helped their career paths, and to give advice to current and future center students.

Our students now work varied positions, from process and packaging engineers to project managers and even a head of quality development. They've worked jobs up and down the East Coast of the U.S. and some have even had jobs overseas.

All who responded encouraged current students to apply for the internships available through the center and most attributed their own time as center...



SLICK - A Searchable Database of Research

A multi-year process has finally culminated in the center's new website going live this past summer. One of our focuses in the redesign was to create a database of research articles for our Industry Affiliate Members to utilize. We are pleased to announce that it is now...

Continued on Page 4

Special Edition: The Center's Last Eight Years

Please enjoy this special edition of CPULD News, featuring many "History of" and "Where are they now" type articles about the center's activities, students, and interns, and what they've been up to since graduating from our educational programs!

Continued on Page 3



The Beginning of the Sustainable Packaging Trainee Program *by Laszlo Horvath*

Our goal in the packaging systems and design program is to develop packaging professionals who are ready to take on the challenges of the 21st century. We believe that the education of a well-rounded packaging professional has three major pillars, which together form what we call a VT-shaped student. The first pillar includes extensive technical expertise in multiple areas of packaging. The second pillar is...

Continued on Page 2

Continued from Page 1

“The Beginning of the Sustainable Packaging Trainee Program”

... interdisciplinary experience. In the industry, packaging professionals need to be able to effectively work together with people in a wide variety of disciplines, including industrial designers, marketing professionals, production experts, and chemical engineers. Therefore, our students learn through an interdisciplinary environment. They take classes in other colleges such as industrial design, business, business information technology, and engineering. The third pillar is purpose-driven engagement, where students can utilize their skills to develop solutions for real-life problems.

In 2010, when I became director of the center, my vision was to transform the center and create an immersive, student-centered, experiential learning opportunity. This is when the Sustainable Packaging Designer Trainee program was established. This training program is a full-year experience. In the beginning of the summer, students participate in a three-day course of group-building activities. The goal is to let the students get to know each other and form a cohesive unit. The next step is a three-month, full-time summer internship where students are trained on a wide range of package testing equipment and standard pre-shipment testing processes. They also start working on real-life industrial testing projects. By the end of the summer, all of the students become “Certified Packaging Laboratory Professionals: Technician Level” through the Industrial Safe Transit Association (ISTA).

During the remaining nine months, the students take Sustainable Packaging Design and Innovation I and II classes where they gain hands-on experience with report writing, professional presentations, project management, continuous improvements, and test programs development. Students also receive their own industrial research and packaging consultation projects, which are sponsored by affiliate companies. They also continue to work 8-10 hours per week in the lab on fast-paced, real-life industrial projects.

We also believe that we are living in a continuously changing world. Therefore, students need to be more adaptive to change than ever before. To develop a continuous improvement mindset, students are trained to work in a fluid environment where any process or system can be changed as long as that change brings increased productivity, a safer work environment, increased sustainability, and/or better process stability. To gain the required continuous

‘VT-shaped’ students with:

Disciplinary depth

Interdisciplinary capacities

Purpose-driven engagement



improvement skills, students receive extensive, hands-on training in lean manufacturing. Every summer, the students work in groups to complete rapid improvement projects (Kaizen) where they select an equipment or process, find improvement opportunities, implement those improvements, and then assess the results of their changes.

By the end of the year, the students have obtained an extensive amount of experience. Throughout the year, they’ve participated in 60-100 industrial projects, completed two independent consulting projects, gained invaluable industrial soft skills through classwork, and often have built lifelong connections with the industry.

In addition to providing an education to our packaging students, the program also helps us advance Virginia Tech’s land-grant mission. Throughout our education mission, we provide solutions to real-life industrial problems, certify packages to ensure that they survive global transportation, and provide talented employees to local companies.





Continued from Page 1
"Where Are They Now?"

... interns with their current career successes.

Amanda Augugliaro said that her time working in the pallet lab was “the sole reason I was given the opportunity to intern with L’Oreal USA and eventually accepted a full-time position with them. It was appreciated that I was well-versed in ISTA testing and that I understood the equipment needed to conduct packaging integrity tests. Every day, I found myself using professional skills I learned from the lab, whether it was creating testing reports or professional presentations to show to upper-level management.”

Jayne Little stated that “working as an intern at the center was not only an amazing resume booster but also led me directly into my job now. I was introduced to my current manager when members of a short course were taken on a tour of the pallet lab. This just goes to show how many networking opportunities you have as an intern, whether this be through interacting with clients during testing, industry members, or companies attending the short courses.

“It was great to still be able to reference my experience at the lab

when I’m out in the field and to be able to recognize packaging technologies and methods that I got to work with hands-on at the center.

“Being ISTA certified is a huge plus, too. Interning at the center required hard work and attention to detail, but it has undoubtedly paid off and I know that I would not have gained the same experience and knowledge working anywhere else.”

Michelle Lipka would like to “encourage students to apply for the internship because you really become immersed in many different testing procedures and standards.” She also said that one of her “responsibilities as a packaging engineer is to determine the correct testing standard to conduct in order to confirm and validate our packaging structures. Working at the lab and specifically taking the class for the lab internship greatly prepared me for this task, as I understand the ISTA guidelines and can accurately determine the correct test for my projects.”

Trey Good recommends taking advantage of all the opportunities afforded students in the lab. “Not only did it help me do better in the classroom but I felt better prepared for the challenges that

faced me in the industry... Don’t be afraid to get out of your comfort zone and try new things and gain different experiences in packaging. This will really help you excel and determine how you want to take your career.”

Trey says that the fact that he got to work on projects, as an intern at CPULD, that were of actual value to companies “gave me great insight into the real world and gave me great project work to discuss in interviews to show what I can do.”

Our students all stated that the internships helped them in two basic ways. The experience prepared them for the actual work they now perform, and the internships allowed them to network with their future employers through class projects, plant tours, and various expos and conferences.

They all appreciate being ISTA certified and having been taught real-life problem-solving skills through their work in the testing labs.

[Pictured (left to right): Michelle Lipka, Jayne Little, Amanda Augugliaro, Trey Good]

Continued from Page 1
“SLICK - A Searchable Database of Research”

... up and running and available to all of our members. We have named this database the Searchable Library of Information and Center Knowledge, or SLICK. When complete, it will represent the culmination of all research the center has completed over its last 50+ years of existence.

Some of our favorite features available on SLICK are the ability to search the hundreds of articles both through simple and advanced search portals - as well as the ability to save the articles one finds personally useful to a private customized library. There are over 675 articles available and more are being added weekly.

These articles cover all aspects of pallet, packaging, and fastener testing and research that has been conducted through the center’s labs, as well as research done by others and the occasional off-topic article that we feel would be useful to our membership.

There are articles such as the “Performance of Pallet Joints Assembled with Nails and Staples” and “Standards for Pallets: The Work of ASME and ISO,” both by George Stern, the original director of the center. SLICK also includes articles about such topics as the “Lateral Collapse Potential of Wooden Stringer Type Pallets,” “Improvements in Solar Dry Kiln Designs,” and even one about fresh produce titled the “Cooling and Transport Tests of New Strawberry Packaging Systems.”

A lot of the articles shared on SLICK focus on wood pallet performance. Many of these projects were completed between 1970-1990; therefore, a lot of articles appear to be old. However, the results and data shared is just as relevant today as it was when the experiment was conducted.

All of the customization and search capabilities are made possible through individual accounts that can be set up for anyone at our member companies (if you work at a company that is a member of the center, simply contact Kate Bridgeman for your personal login information).

We encourage all of you to search SLICK for the answers to your fastener, pallet, and packaging questions. If you don’t see what you need, check back often, or feel free to contact us and ask if we have any research waiting to be uploaded about your topic of interest.

Click the “My Library” button to be taken directly to the SLICK database:



SLICK

SEARCH BY TAG:

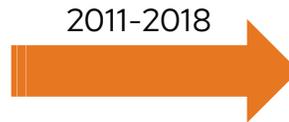
Corrugated Board	Fastener Evaluation	Load Bridging	Lumber Species Studies	Market Studies
Membership Research	NONE	Packaging	Pallet Durability	Pallet Strength
Presentations	Preservatives and Coatings	Recycled and Repaired Pal...	Standards	Unitload Evaluation
Wood Products Other				

SEARCH:

Advanced Search

The Lean Transformation of the Center - A Multi-Year Renovation Project!

By Laszlo Horvath

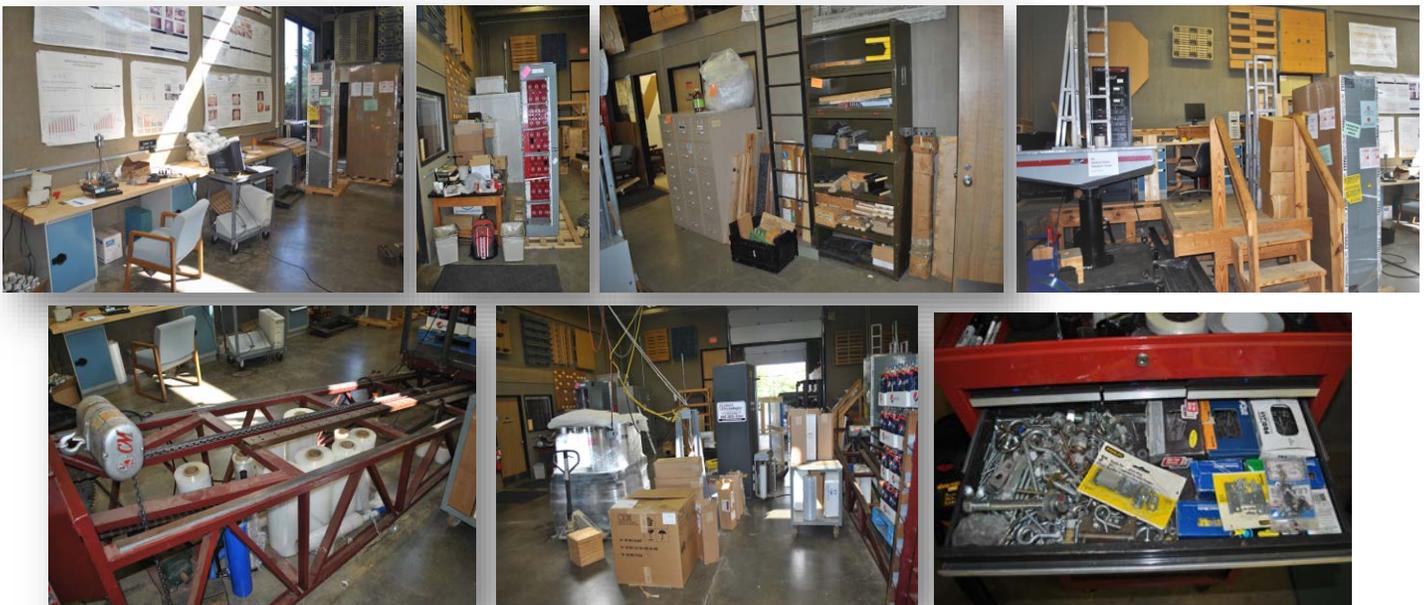


The William H. Sardo Jr. Pallet and Container Research Laboratory is the most comprehensive pallet testing and research laboratory in the United States. To improve the efficiency and precision of its operations, the laboratory began a lean transformation process during the summer of 2011.

Prior to this lean transformation, the layout of the laboratory was not efficient, which created challenges, especially when large amounts of testing materials would arrive at the lab. At that time, most tools did not have assigned locations, thus many tools went missing on a regular basis, and a lot of project time was spent looking for the necessary tools. Most tools were kept in drawers, which added to the difficulty in finding and monitoring them. There were no clear distinctions between space for research and space for teaching; therefore, the lab was also filled with unorganized teaching supplies. Pictures of the state of the lab in 2011 are shown below.

In 2011, we started with the 5S's lean improvement processes. First, we removed all unnecessary items from the lab (Sort). Then we arranged the remaining items based on their use and assigned a fixed location for each of them (Set-in-order). We then cleaned the lab and maintained the equipment to prevent deterioration (Shine). Next, we worked to create a system that would make sure that all tools get back to their fixed location by the end of the day (Standardize). ...

Continued on Page 6



Continued from Page 5

... The last step was to Sustain the changes. Therefore, we created an annual lean training program to ensure that all new students are properly trained and started ongoing Kaizen (rapid improvement events). As a result of the events we gained more space and more tool visibility. See pictures below.



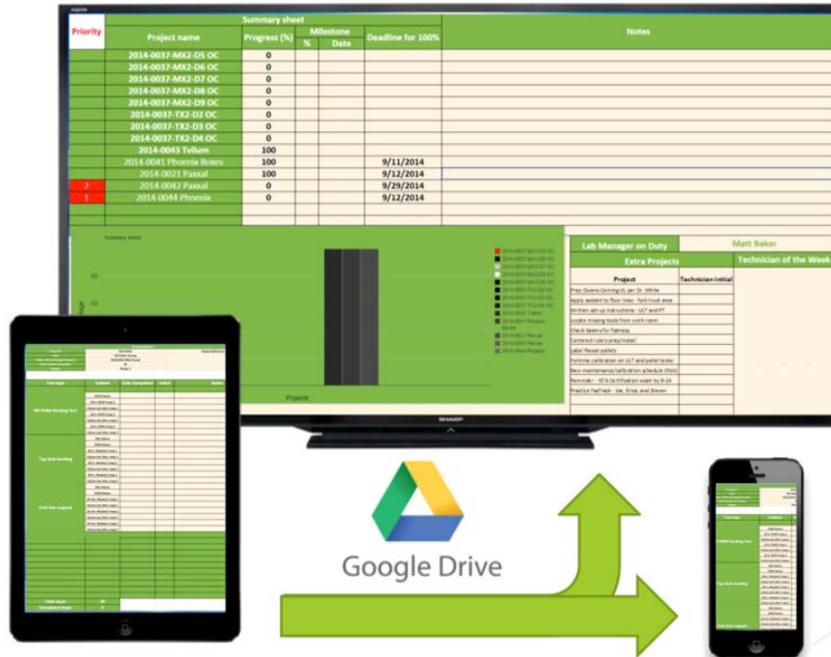
In 2013, we continued our lean endeavor. The pieces of equipment were color coded using a green and white color theme. The goal of the white color was to identify any leaks or maintenance issues due to the improved contrast. The organization of the tools was improved. The tools necessary for the operation of each piece of equipment were placed next to the equipment on a shadow board. Tools that were used often but not tied to a specific piece of equipment were placed on a main pegboard easily accessible anywhere from the laboratory. The remaining tools were placed in a dedicated storage closet. Cleaning stations and a daily cleaning schedule were developed. We also started to develop a paper-based scheduling system for the projects. See pictures below. ...

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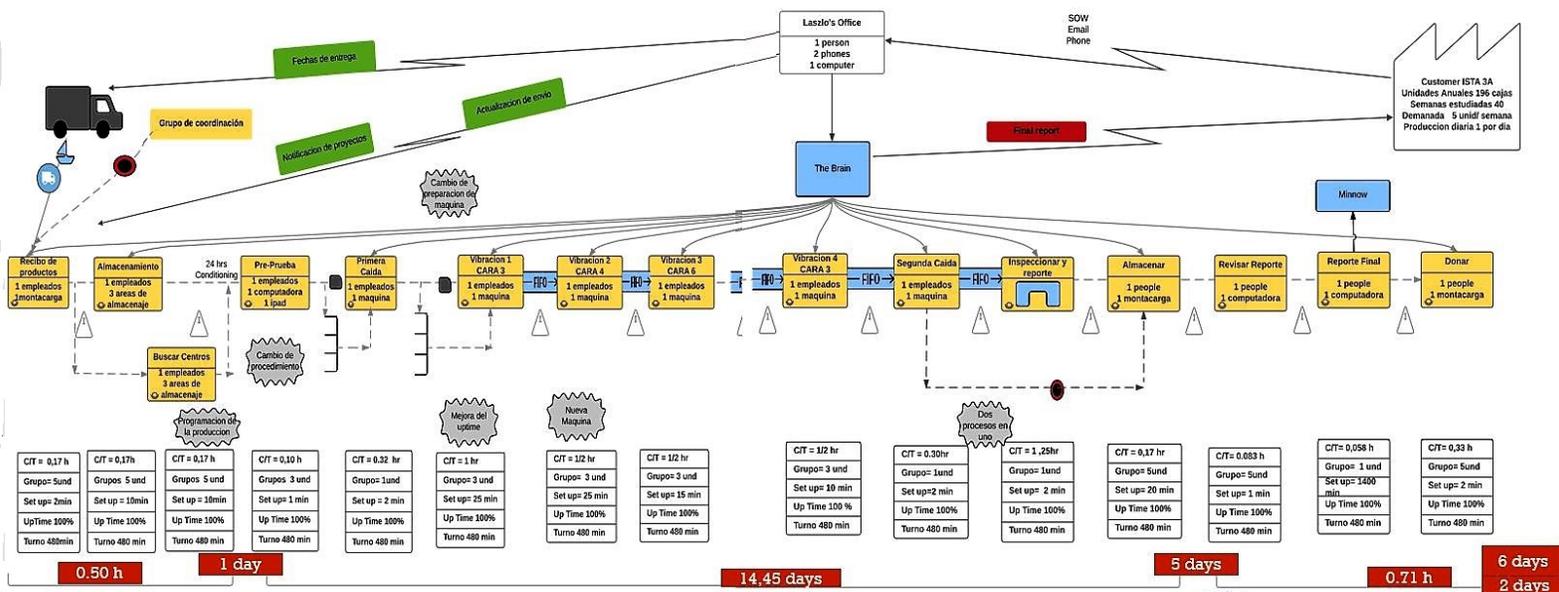
... In 2014-15, we digitized our data collection systems using Apple iPads. Using iPads helped us structure our data collection, avoid losing or mixing data files, and streamline picture documentation. We also developed a digital project scheduling system that linked all of our iPads and servers. We also updated all of the lab's computers and purchased digital data collection systems.



In 2016, we renovated and reorganized all of our storage areas in order to fit more tools in less space. We created a small woodshop to ensure that we could effectively build wooden jigs, cut rigid plates for ISTA tests, and even build our own custom pallets. To optimize our ISTA testing process, one of our summer interns mapped the ISTA 3A testing and reporting process and create a detailed value stream map. Using this value stream map, we identified many opportunities for increasing efficiency and reducing testing time. She also developed an "ideal state" map, which served as a road map for improvements for the upcoming years. ...

Continued on Page 8

Ideal State





Continued from Page 7

... With the help of the department, we also added a new vibration table and a new forklift, both of which gave our lab new capabilities.

In 2017, with the help of Grupo Phoenix, we started an extensive renovation of the lab to create a truly lean space. As part of the renovation, we repainted the whole lab and our testing equipment, installed an epoxy floor and new shadow boards, developed visual energy control procedures and standard operating procedures, and completely revamped our organization system. We also added a new stretch wrapper to further increase our lab's capabilities. This was a truly significant renovation to the lab. See pictures below.

Although we have made a lot of good progress in the past eight years, our lean endeavor has just started. Our final goal is to create the most efficient pallet testing laboratory in the United States, where students can get real-life hands-on experience in lean management.



Round Table Discussion With Alumni

Question 1: How did your course work, lab work, or internship with the center help you obtain your current career position and/or assist you in the day-to-day activities in your current position?

Michael Fortunato: *"I can actually thank Dr. Horvath and CPULD for connecting me with Niagara Bottling. I was working at CPULD my junior year when Niagara Bottling sent their product to the center for testing. I expressed my interest in a summer internship with them to Dr. Horvath, who connected me with Niagara's packaging team... CPULD introduced me to the world of packaging testing and how it is used within the industry, taught me how and why to operate testing equipment, interpret industry standards, and testing and reporting methods that I will use for the rest of my career. Not to mention, it connected me with a lot of great people, and made the curriculum at VT a lot more applicable."*



Hunter Houston: *"Working in the lab helped me to build connections with professors and other people in the industry, which ultimately helped get my foot in the door at PalletOne. I learned how to set high standards for how things should work and run. I learned to apply lean principles throughout the plant to make things easier and cleaner. I also learned how to write reports and present data."*

Cyrus Adibpour: *"The lab helped me understand the process of project management, safety, consolidating data, and better judge priorities in a work environment. The course work/lab work also helped me better delegate work to other co-workers. By doing group projects and performing lab work together, you are forced to work with others and try to balance the weaknesses/strengths. I can say that because of CPULD, I actually performed lab work on products for the company I currently work for."*



Matt Baker: *"The hands-on experience is invaluable to your confidence, your knowledge, and your resume. CPULD teaches you to quickly adapt to new packaging challenges such as truck batteries, milk, or salad. Each has a unique challenge. Additionally, the experience in managing projects and documenting testing is invaluable. On multiple occasions I have been called onto a project where a big box retailer is experiencing failures and they don't know what to do. Usually it is a situation that I have already experienced in the lab and I feel comfortable making a recommendation on site. If not, I resort to my experience with ISTA testing to validate potential solutions."*

Sam Phanthanousy: *"The course work/lab work that I had in school helped me understand the warehouse operation and the big picture ideas of what you should keep in mind when working in that type of environment. Having classes that were very hands-on assisted me in being comfortable at taking action at work and stepping into solving problems without being told to do so. I also believe the uniqueness of our packaging program helped me stand out during the interview process."*



Page Clayton: *"The course work that I have completed in Virginia Tech's Department of Sustainable Biomaterials in both the packaging/unit load and wood science courses have been invaluable for my day-to-day activities. The packaging knowledge has been critical for improving upon and providing alternative unit loads and packaging for clients. The wood science background that I have has also become indispensable for research into new product lines. In addition, being exposed to packaging standards and other industry regulations has been helpful in evaluating other organization's/association's technical standards and how they apply to our product. Finally, the lab experience has provided an in-depth "hands-on" primer on unit loads and supply chain material handling scenarios and how testing can be used to evaluate a unit load's performance in each."*

Landon Holbert: *"Working at CPULD has been a great help for this position. Whether I am designing a new package or determining the cause of a package's failure, it seems I am always referencing the field knowledge that I gained testing such a wide variety of packages and unit loads at CPULD. Additionally, understanding the ISTA, ASTM, and ISO standards helps me to guide customers that are looking to meet the requirements of these standards. With so many products being distributed via e-commerce, having previous experience with testing and designing packages for this purpose has been instrumental in getting up to speed so quickly in the packaging workforce."*



Round Table Discussion With Alumni (continued)

Question 2: What advice would you give current Virginia Tech students in regards to their education and the internships available through the Center for Packaging and Unit Load Design that will help them in their future careers?



Erica Roesel: “At CPULD you are exposed to the common package testing standards and how package testing is carried out. So if you have to recommend a package test method to your employer or are responsible for package testing as part of the package design process, you already know what kind hazards your package will face when it is sent in for testing. At CPULD you also learn what needs to be organized behind the scenes for package testing: delivery of goods to be tested, test report writing (which requires picture taking), and pick-up of tested goods. Identification of continuous improvement opportunities and SOP writing and maintenance are often parts of the job as a packaging scientist/engineer.”

Cyrus Adibpour: “Being involved with the CPULD gives you real-world experience with everything from project management to continuous improvement. Nowadays every company is looking for someone with experience in certain jobs. This will get your foot in the door for companies because of the diversity of different projects. If it wasn’t for the lab work I did with Rehrig Pacific Company and CPULD, I would have never even thought to apply nor would I have ever gotten an offer from them.”



Sam Phanthanousy: “I am thankful for the time I had with CPULD because it assisted me in my career in multiple ways. I believe being involved in CPULD will help you gain confidence in your leadership skills and help you improve your critical thinking ability. It will challenge you to think innovatively and give you a different perspective when working. It will show you that there is always more than one way to solve a problem. CPULD will also give you experience with what a company looks for when you are communicating with them, whether that comes to reports or presentations. It is a great experience that most students do not have and I suggest taking the opportunity while it is presented to you.”

Zack Shiner: “Being involved with the Center for Packaging and Unit Load Design is a great way to network and learn about distribution packaging. This will help you understand what happens in the warehouse and how to test. With the increasing popularity of Amazon and its new SIOC incentive program, it has been great to be familiar with ISTA testing and to understand the process. Overall it is a great place to prepare for a career in packaging and you also get to drive forklifts.”



Matt Baker: “For those who are considering the lab, I would encourage them to fight for the position. It sets them out from their peers. For those already in the lab, it is important to perform the testing but it is more important to constantly ask why the test is set up in the way it has been. For example: why are the truck spectra defined as they are? This is important because e-commerce (Amazon) is requesting the development of new tests that better reflect their distribution system. The same will be true for a future with electric trucks from Tesla. It is likely that the ISTA horizontal loads will need to increase to reflect the high acceleration and regenerative braking of these new trucks. The lessons that can be learned in the lab are endless.”

Page Clayton: “The Center for Packaging and Unit Load Design isn’t just a chance to have an internship or a job on your resume. CPULD gives students a leg up on the future concepts, standards, and information that they will need to know before becoming a member of the packaging industry. It also provides “hands-on” experience with testing standards that are used within the industry to validate the limits of a package or unit load. In addition, it allows a student to actively use their mind and use problem-solving skills to tackle complex problems within the lab. Finally, the lab provides multiple networking opportunities with the lab’s clients and allows the students to work with the packaging and wood science faculty on a one-to-one basis.”



Nathan Gerber: “The lab work helped me get this job because it created a connection to the company I work for. My advice is to continually connect with potential employers through CPULD. You’re more likely to get job offers from people you know than from online applications, so keep connecting to the clients and other companies involved with CPULD.”

CPULD Alumni - Where Are They Now?



Cyrus Adibpour
 Project Management
 Rehrig-Pacific Co.
 Charlotte, NC



Sam Phanthanousy
 Operations Manager
 Amazon
 Kansas City, KS



Page Clayton
 Sales Engineer
 Litco
 Vienna, OH



Matt Baker
 Innovation Packaging
 Engineer
 Coca-Cola Company
 Atlanta, GA



Zack Shiner
 Packaging Engineer
 Apex Tool Group
 Raleigh, NC



Nathan Gerber
 Project Manager
 Total Packaging Services
 Richmond, VA



Trey Good
 Packaging Engineer
 Newell Brands
 Huntersville, NC



Hunter Houston
 Plant Manager
 PalletOne
 Port Arthur, TX



Michael Fortunato
 Packaging Engineer
 Illumina
 San Diego, CA



Michelle Lipka
 Associate
 Packaging Engineer
 Newell Brands
 Charlotte, NC



Jayne Little
 Associate Packaging
 Engineer
 IPS Packaging
 Charlotte, NC



Amanda Augugliaro
 Compatibility Engineer
 L'Oreal USA
 Blacksburg, VA



Erica Roesel
 Seeking employment
 Fairfax, VA
 (Process Engineer,
 Greenerity, Germany)

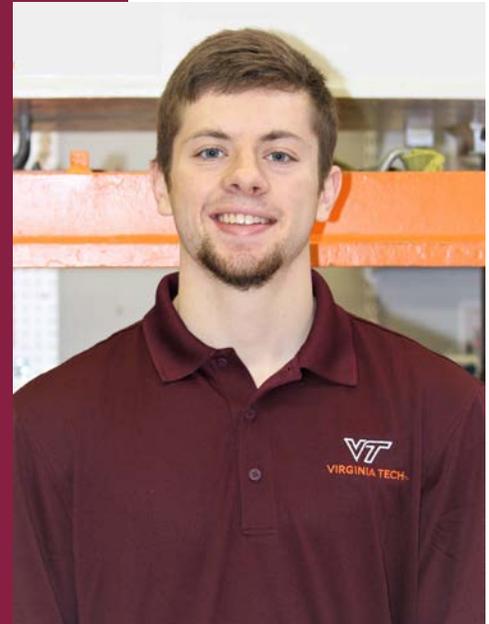


Landon Holbert
 Structural Designer
 International Paper
 Portland, OR

Personnel Spotlight

Chandler Quesenberry: "I am from Galax, Virginia, and a 2018 graduate of Virginia Tech in packaging systems and design. Initially, I chose the packaging science graduate program because of the amount of exposure to distribution packaging and pallet design the center provides. After joining, I had the different roles of graduate lab manager, research assistant, and teaching assistant. The graduate program is providing me with many more skills than I anticipated. It is designed for professional development in addition to studying packaging science, and I am very pleased with my progression as a professional."

Most of my time, I am researching pallet/box interactions within a unit load. I conduct compression tests to investigate the effect of pallet stiffness on the strength of corrugated boxes. In my free time, I enjoy watching basketball and experiencing the Virginia mountains with my fiancée, Allison, and dog, Mia."



Wood Pallet Design Short Course - April 23-25, 2019

Pallet design is an integral part of the material handling system. Wood pallet suppliers, sales professionals, professionals responsible for pallet purchases, packaging engineers, and pallet specifiers will all benefit from an understanding of how to design pallets that will last longer and perform better.

This intensive three-day short course will teach techniques that pallet designers can use to save money when designing pallets by considering the interactions between all of the components of the material handling system. The course will use state-of-the-art pallet design software called "Pallet Design System" (PDS) to better demonstrate the steps that go into the pallet design process. You will also be taken on a tour of a working, state-of-the-art, pallet testing laboratory!



Unit Load Design Short Course - August 13-15, 2019

Unit load design is a revolutionary, systems-design approach that significantly reduces the cost of distributing products to consumers by understanding how pallets, packaged products, and handling equipment mechanically interact. Unit load design is a new and valuable service that pallet, packaging, and handling equipment suppliers can offer their customers.

This intensive three-day short course will teach techniques that pallet and packaging designers can use to save money on corrugated board and plastic packaging materials when designing pallets and packages by considering the interactions between all of the components of unit loads. The course will use a state-of-the-art unit load design software called "Best Load" to better demonstrate the steps of unit load design process. You will also be taken on a tour of a working, state-of-the-art, packaging and pallet testing laboratory!



To learn more or register for these short courses visit:
<https://www.unitload.vt.edu/education/continuing-education/>

2019 Calendar of Upcoming Center Events

- March 9-17: Virginia Tech Spring Break
- April 16: “How Pallet Stiffness Influences the Cost of Packages Carried by a Pallet” webinar by Dr. Laszlo Horvath (for members only)
- April 23-25: “Wood Pallet Design and Performance” short course by Dr. Laszlo Horvath and Brad Gething
- May 8: Virginia Tech spring 2019 classes end
- May 21: “Current Status of the U.S. Pallet Market” webinar by Dr. Laszlo Horvath (for members only)
- Aug. 13-15: “Unit Load Design and Performance” short course by Dr. Laszlo Horvath and Dr. Mark White
- October: Center Membership Meeting



Matt Baker: “Bonus Question. When a truck of fresh salad is packed in California, the pallets are all placed on the left side of the truck. Why? I’ll send some Coke swag to whoever gives the correct answer to Dr. Horvath first!”

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Contact Our Team:

*Quotes for new testing projects,
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 unit load design projects,
 membership with the center,
 new research projects*

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