



## The ENGINEERING CAREER COACH PODCAST SESSION #15

### How to Break into the Field of Sustainability with Professional Soccer Player Turned Professor, Leidy Klotz

Show notes at: [engineeringcareercoach.com/leidy](http://engineeringcareercoach.com/leidy)

**Anthony's Upfront Intro:** You are listening to *The Engineering Career Coach Podcast* with Anthony Fasano session #15. In this session Dr. Leidy Klotz will explain his journey from engineering student to professional soccer player to professor of sustainability and how you as an engineer can break in to this exciting new field. Let's do it!

**Episode Intro:** Welcome to *The Engineering Career Coach Podcast*, where it's all about helping real engineers to overcome real challenges and get real results. And now for your host, who is on a mission to inspire as many engineers as possible, professional engineer and certified career coach, Anthony Fasano.

Hello, hello, hello everyone. This is Anthony Fasano, your engineering career coach and I want to start by reminding you that you can visit [engineeringcareercoach.com/freeresources](http://engineeringcareercoach.com/freeresources) and sign up for daily, weekly or periodic engineering career advice and inspiration that I send out to thousands of engineers everyday. So please take advantage of that. I want to welcome you all to the show and tell you that it has been an amazing few weeks for this podcast.

The response to the last session, which was an interview with ASCE National President, Randy Over was amazing. We had, I want to say almost a thousand downloads in one day, which is phenomenal for this podcast. And those of you out there that missed it you can check out that episode at [engineeringcareercoach.com/randy](http://engineeringcareercoach.com/randy) and please check it out. He was real energetic. It was a great interview and from the feedback that I'm getting and the emails that I'm getting from people, it was very well received.

And just to stay on that topic for a minute, I do also want to say that we received our first iTunes review and rating, which I really, really, really appreciate as well and I'm going to take a second here to read it. The review came in from Andy, and Andy said, "Anthony Fasano is the real deal. Episode nine is especially helpful to me as my annual performance evaluation is coming up. The podcast provides so much value and so much helpful info for engineers. I even created an apple ID just so I could leave a five star rating on iTunes. Thank Anthony and keep up the good work." Well thank you Andy for taking the time to do that and I will certainly keep this going.

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And please those of you out there if you'd like to leave a rating or review, just honest feedback, you can do so by going to [engineeringcareercoach.com/itunes](http://engineeringcareercoach.com/itunes). And please, it's real helpful for me because these podcasts are, you're talking into a microphone, it's not a live show so you're putting it out there for people and you don't really have that live so to speak, feedback. So getting some reviews and ratings just helps me understand if it's helpful, how it's helpful, why it's helpful and then I can continue to keep this going and continue to cater it to your needs out there and that's really what I want to do.

So we've got a great show today. We are going to be talking with Dr. Leidy Klotz, who is a friend of mine, who also went to Lafayette College with me and has had a very interesting journey since then. He'll talk a little bit about his journey in the beginning of the show, going from a student then to a soccer player and then eventually into the sustainability field. And then towards the middle, to the end of the show, Leidy and I really get into different ways you can break into this field and become an expert in this field quickly because sustainability is the field that's very young and very up and coming. And Leidy actually gives some examples towards the end of the show, with a couple of his students on jobs that they got and things that they're doing and impacts that they're having in the industry. And he also stays on the call for our career changing tip at the end of the session and he's going to give out a very interesting book that you can read to kind of get in to the sustainability mindset.

So with that I'm going to kick off the motivational moment and intro Leidy and get into our interview. But I just want to mention one more thing very briefly. For those of you that are out there and really want to get motivated in your career, you really want to become a partner in your engineering firm, you really want to climb that ladder quickly - I'm putting on an event through my **Institute for Engineering Career Development** in Austin, Texas at the end of April. We're up to sixteen or seventeen top of the line speakers, being some of the top rated engineers in Texas, CEOs, Presidents, we have a personal development guru coming, Brett Harward, who's an author to speak. We just put another entrepreneur in there that she's an amazing person that went from an engineering background to entrepreneur and starting up businesses. So it's loaded with great information. There's going to be fun social outings as well and tours of some different engineering feats in the city of Austin. So please, you can check it out at [engineeringevent.com](http://engineeringevent.com). Again, that's [engineeringevent.com](http://engineeringevent.com). I'd love to have you come join us and really start to take your engineering career to the next level. With that it's motivational moment time.

**Anthony's Motivational Moment:** The quote I've chosen for today's motivational moment is as follows - *"The world is all gates, all opportunities, strings of tension waiting to be struck,"* by Ralph Waldo Emerson. And I chose that quote because it's so true. I mean think about it. How many opportunities are available out there for engineers? I mean you can create your own job as an engineer right now, which Leidy and I are going to talk a little bit about shortly. But just think about it,

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you can create your own job in the sustainability field. There's new, different kinds of materials being used out there. There's different kinds of monitoring being now needed on projects. If you're an engineer without a job, think about how you can create one.

If you want to get into sustainability Leidy will lay out the steps for you in the next few minutes of this show. But never think that there's not an opportunity for you out there somewhere if you're an engineer with a degree, with a background in engineering, with the analytical thinking skills. They're out there and I'm going to really urge you through this podcast, through my blog and through everything I do to try and find them.

So with that let's get right into our interview and discussion here with Leidy. And just to give Leidy a formal introduction, he is Dr. Leidy Klotz, Associate Professor of Civil Engineering at the Clemson University Glenn Department of Civil Engineering. Leidy has a BS in Civil Engineering from Lafayette College, an MS in Construction Engineering from the University of Washington and a PhD in Architectural Engineering from Penn State. His areas of interest are decision making for sustainability in the built environment, gender and sustainability in engineering, systems thinking for sustainability and sustainable energy innovation. So with that let's get right into the interview with Leidy.

## Coaching Segment:

**Anthony:** Alright, now it's time for our coaching segment of the show. In this show we're going to have our guest, Dr. Leidy Klotz, who I just introduced with us to talk about sustainability because it's something that everybody talks about in the engineering world. I get a lot of questions from my readers and listeners about what are the opportunities out there is sustainability and I figured the best person to bring on would be Leidy, to talk to us a little bit about it. Hey Leidy, how you doing?

**Leidy:** Not bad. How are you Anthony?

**Anthony:** I'm doing well. Unfortunately our weather up here is probably not as good as it is down there for you, although I know you're going through a bit of a storm right now. But anyway it's good to have you. Leidy and I actually went to school together, undergraduate engineering school at Lafayette College and as I said in the introduction, he is now teaching at Clemson University. So let's jump right in to that Leidy. Tell the listeners a little bit about yourself and really how you went from graduating as a Civil Engineer back in 2000 to now being an Associate Professor focusing on sustainability.

**Leidy:** Yeah, so I, like you said we went to college together and I think - what were we two of thirteen graduating Civil Engineers?

**Anthony:** That's right.

**Leidy:** That's the story I tell anyway. So a small group of Civil Engineering students graduating in 2000. As you know, when I was in college, I mean I got good grades or decent grades like you did but I was more focused on playing soccer really than the engineering side of things. Soccer was certainly my passion and after school I played for a couple years. In professional soccer I was making like two thousand dollars a month, so it wasn't...I was making decisions when I went to the store on whether or not I could buy cheese this week. But I was technically a professional soccer player. I mean I was getting paid enough to support myself and I was getting to see the country and things like that. I told myself when I started, I was like I'll give myself two seasons and see where it's going and it wasn't really going anywhere for me. Part of it was I mean I was playing more and more but still a decent amount of the time sitting on the bench and then the other part of it was even if I made it really big at that point it wasn't going to, it was just delaying the start of my other career. So that's when, after two seasons of that is really the first time I started thinking about, "Okay, what am I going to do with the rest of my life?" And so I had the Civil Engineering degree. I liked the problem solving mindset of engineering but I didn't want to be a pure, I guess like a pure design engineer.

So I did Construction Management as my first job. I was working doing school construction projects mostly in New Jersey with a big project management company and that was good. I got to see all the different phases of construction projects from the programmatic stage all the way up through building actual facilities. So I did that. After about a year of doing that when I realized there wasn't like a Summer break coming and I'm going to start over again. I mean I liked it and I was making decent money but I started to think about is this really what I wanted to do for the rest of my life. So I kept working but eventually hatched this plan that I thought I might like doing the research and teaching side of things.

So while I was working I did my Masters degree online to try to test out if I would like doing more education and perhaps going the professor route. I liked the Masters degree and then so after about four, I guess 2005, so five years after graduating I just made the jump full-time to go back for my PhD. So I did my Masters degree from the University of Washington. I never set foot on campus. Then I went back and did my PhD at Penn State from 2005 to 2008. While I was there I really saw that I liked teaching and the research. That was the first time where what I was getting paid to do didn't feel too much like a job. Mondays were just as good as weekends for me, in a different way. I looked forward to the weekends and stuff but I also like looked forward to the workweek. So that's when I knew okay I think I made the right decision.

In 2008 when I graduated I looked around for jobs and interviewed at a bunch of places and Clemson was by far my favorite, so I was happy to end up down here and I've actually liked the being a

professor even more than the graduate school experience. There's a lot of opportunity to kind of shape my own path and get to work on the things that I like working on and also, obviously the teaching and working with students. There's not really, for me there's not much that's more rewarding than that. It can be really, it can be really draining on those days where you spend the whole day talking to students and teaching, but it's also just incredibly, incredibly rewarding so that's kind of, yeah that's a long answer but that's kind of where I'm at.

**Anthony:** And what brought you into the sustainability side of it?

**Leidy:** Oh good question. So, I mean I always had the interest in the sustainability side of it. I guess my, I think growing up my parents probably put it into me by osmosis, making us walk around in the woods and things like that. I always enjoyed being outdoors and obviously sustainability is so much more than that, but I think that's kind of where it started and then as I started to, that was always my intention when I went back to graduate school.

**Anthony:** Okay. Well tell me, since we're on this topic Leidy - and I know that sustainability has become such a buzz in the industry, in the engineering industry, green trends, LEED. First of all, just for the listeners, give them kind of your definition or could be couple sentences of your thoughts on, when you hear that word, what does sustainability mean to you?

**Leidy:** Okay. I mean this is the clichéd definition but I really think it's meeting the needs of the present generation without compromising the ability of future generations to do the same thing. And there's a couple things that are important in that definition. I mean one is that it's not just about future generations. I mean it's also about meeting the needs of the present generation. I think when students understand that about sustainability it becomes a appealing to a much broader group. And then the other thing, it's nothing, it's not about the environment and isolation. I mean it's about meeting the needs of people now and in the future and obviously the environment's a huge part of that because we all exist because of our environment. Without a functioning environment or without a good environment then our quality of life isn't going to be good.

**Anthony:** Leidy, can you just repeat that definition for me one more time?

**Leidy:** Okay. Yeah. So meeting the needs of the current generation without compromising the ability of future generations to do the same thing to meet their own needs.

**Anthony:** Okay. Alright, great. Now tell me about, obviously that's an important thing. I mean at least I think so and I know a lot of people think so, preserving this generation or giving us a good quality of life now but also for the future. So tell me how you see this having an impact on the world moving forward, kind of big picture but also from the standpoint of people in the engineering world.

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Like a lot of engineers contact me and say, "Anthony what's the whole deal with the Green Trends, sustainability? How do I get a job in that field?" So I guess kind of a two-part question. One, how do you see the impact of sustainability having on the world and where it comes into play and then secondly, engineers?

**Leidy:** Okay. I guess, I mean I would hope that the impact that would have on the world is that it's just kind of this filter that all decisions are being passed through. So rather than being something that you bolt on to a project or think about after everything else is done, it's really something you're thinking about all along and applying this to all your decision making. Very similar to the way that engineers, we think about cost when we're making decisions right. So you might design a building but in the back of your mind you always, or not even in the back of your mind, you're always thinking about what it's going to cost. So I think if sustainability can be a filter through which all our decisions pass, that's the only way where we're going to have the progress that's needed to address some of the challenges that sustainability's trying to respond to. So that's the big picture overview in that the impact that I hope it would have on the world.

But I think as far as career opportunities for engineers there's the really simple one right, where it's like okay if you can have this mindset you'll come up with more appropriate engineering solutions that better serve the public and that's what we're trying to do. But then there's also more specific opportunities for careers, just figuring out ways to reduce energy demands. I mean that's a big one for, I always look at things from a civil engineering perspective and if we've got buildings are using forty percent of our energy and transportation is using about thirty percent of our energy in the US, that's seventy percent of our energy use, which is directly related to our climate change emissions and that civil engineers have a really big impact on. So there's all kinds of opportunities in designing buildings that use less energy, designing, retrofitting existing buildings to use less energy, making smarter transportation networks that use less energy. So in addition to kind of having this broad overview I think that there's also some very targeted jobs that are emerging.

**Anthony:** Okay. Tell me about your specific research that you do, what you focus on.

**Leidy:** Okay. I'm a little different I guess that some professors in that I have some things that I'm really interested in but I also let the students drive, let the students pursue their interests too but I guess the big picture is looking at how engineers make decisions and so one of the strains of research and how they make decisions for sustainability. And so one of the things we're looking at is similar to how psychology is informed economics recently, where we realize that everybody's not actually acting in a perfectly, what you would term a rational manner. There's a lot of these biases and influences on our decisions that are pretty systematic, trying to pull some of those things into how engineers make decisions, decisions for sustainability. And then it's really kind of a interdisciplinary approach, where we're looking at advances in psychology, advances in sociology. Not necessarily

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trying to make advances in those fields but at least pull the latest advances from those fields into engineering decision making.

**Anthony:** Leidy, do you have an example of a project that you worked on or your students worked on, just to give the listeners kind of an idea of what it might look like?

**Leidy:** I guess I can describe two. So one is a student by the name of Jackie Blizzard. She works for Google now in some of their educational initiatives, trying to get more students interested in engineering. But she, her research was based, we did a national study of college engineering students and the purpose of the study was to see like what were students who are interested in sustainability doing, what types of things made them interested in sustainability. And her research looked at kind of how these, what competencies that were interested in sustainability and what they wanted to do with their careers and with their lives. So she had some pretty interesting findings in there about, that these students who are interested in sustainability are also really motivated to make a difference in the world. One of the scary things was that we're not really attracting them to engineering. They're not necessarily seeing engineering as a way to shape the world and that's just kind of miscommunication on our part I think because what more can, engineers shape the world I think more than or as much as any other profession.

**Anthony:** Sure. Sure, yeah that's interesting. That's an interesting finding.

**Leidy:** And that was very much on the education side of things like engineering education. And then, I'm trying to think, I've got a student now, we're working with envision, which is the, it's kind of like LEED for civil infrastructure. So American Society of Civil Engineers and a couple other professional organizations have this rating system for sustainable infrastructure projects. And we're looking at how the decisions are framed in that rating system and how the way those decisions are framed might actually influence the decisions that are made by the engineers. And so for example just by changing the way, so this is a point based system like LEED and rather than having the people who are using the system start with zero points, having them start with a hundred points. Not changing anything about the system or anything like that, just changing the amount of points they start with and rather than adding points if they do something good, subtracting points if they fail to do something good, then seeing the difference just in the way things are framed and how that would impact the decisions that are made.

So that's a really cool project because we're working with psychology professors and economics professors from Columbia University. So it's been really fun to pull in those other disciplines and take kind of the latest advances in their fields and figure out how to apply them in engineering decision making.

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**Anthony:** That's interesting. Alright, so if I'm an engineer right now Leidy, I'm a practicing engineer and I decide that I really want to get into the field of sustainability. What can they do? Do they take a course? Do they get a degree? What kind of recommendations, what are some options for them?

**Leidy:** Yeah. So some of the coolest jobs that I've seen, I teach a lot of senior students and so I have like a hundred seniors in my class every year and I talk to them all about what they're doing with their jobs. And the ones that I've seen that have gotten the coolest jobs that are specifically related to sustainability have been students that were, they're interested in school, they try to learn as much about it as possible. But then after school they just said, "I'm going to just pick this company." Like there's a student now who's working for Southface in Atlanta, and they do a bunch of, basically trying to improve energy performance of the buildings in Atlanta. I mean she had a 3.8 GPA. She could have gone and worked for any, you know CH2M Hill or any big engineering company, but she said, "I want to do this. I want to get into the sustainability field." So she actually did an internship with them, just starting out after graduating and I forgot what she was getting paid but it was similar to my soccer salary. It was like fifteen dollars an hour or something like that. So she did that for three months but now she's a fulltime employee with that company and she's essentially within a, she just graduated last year and she's established herself in the sustainability field and has all kinds of like great networks around the Atlanta area.

So I think, and I've seen that several times where the students rather than just take a job, they invent the job and say okay, they either invent a job for themselves or they say, "This is the ideal company I want to work for and I'm going to just go almost volunteer with them or intern with them and show them that I can do it." So I think there's a lot of on the job learning that can happen. Obviously you want to take as many classes as you can in school that are related to it, but I don't think it's something where you need to necessarily go back and do ten years of advanced study in sustainability.

**Anthony:** Yeah I think that's a good point and I think for everyone listening, I think it's important to understand that when you have an industry that's, I mean I don't want to say new because this isn't a new industry, but when you have something that's kind of trending and people are interested in it and it's getting a lot of buzz around it, there may not be a specific job for you. You may be creating jobs. I mean when industries start to flourish, so to speak, that's when these kinds of jobs even get created.

So if you're an engineer out there that wants to get into sustainability and you do a Google search but you don't find the perfect job for you, I think you need to think bigger than that and be a little more open minded and understand that if you do some of the things that like Leidy just talked about like whether you're interning at a company or get in on the ground floor with a company that's just doing different kinds of sustainability, you might find yourself creating something new. I mean that's the nice thing about industries like this, is that there's a lot of opportunity. Leidy, what are your students, what degree do they get with you? Is it a PhD I guess they're getting?



**Leidy:** Yeah. And I just want, let me chime in too, so I made the point about, the student's name was Abby that's working down in Atlanta. But the other interesting path that I've seen that built on what you just said is engineering at least, especially construction is a very conservative industry, where like you have to be in the industry for twenty years to get any kind of leadership position or age is really important and experience is really important, but I'm finding that a lot of these students go out and yeah they have to get their experience in the industry, but sustainability is an area where they can be experts right away in the company. So it could be in their first year with one of these big companies and all of a sudden the bosses are coming to them asking them questions about sustainability.

So it's kind of like there's opportunities to make those your own niche, like in a unique company or in your own company but I also think there's opportunities within the framework of like traditional engineering jobs to really build your own niche with sustainability, which I think, I've seen a lot of students have success with that too. And so let me then, your other question - so I teach about a hundred and fifty undergraduates each year and then I work really closely with a bunch of research students. And the research students for the most part are getting PhDs, and I've had four PhD students graduate and I'm working with about eight more. So I'll have like one or two graduate every year.

**Anthony:** And what is that? What is that PhD in? Something to do with sustainability?

**Leidy:** Yeah, so their PhD says Civil Engineering.

**Anthony:** Okay.

**Leidy:** It's funny. That's one of the debates that's going on in academia right now. It's like is, and some places will have - I know RIT has a PhD in sustainability. I think Arizona State might have one that's officially named sustainability. But right now when you're graduating, people are looking at the stuff you've done, not the name of the degree.

**Anthony:** Okay.

**Leidy:** If your PhD is in Civil Engineering and you've published three articles from your dissertation that are in the sustainability journals, that's better than having a degree that says sustainability and no publications. So it's really less about what the degree says and more about what you've done.

**Anthony:** And I think the point is for those of you out there that may be already in industry but you want to get into sustainability, is that regardless of what the names of these programs are there are programs out there that focus on sustainability, masters degrees, PhD programs. So you may not

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need to get a degree to get into the industry, but I'm sure that it would be helpful for you potentially, depending on your situation, to get involved in the research side of it or not just research, even if it's a masters degree or a couple courses, like Leidy said, just some open courses, whatever the case may be, for your resume, for your experience, for your knowledge, to help you. And I think that it's important for you to know that those programs exist today and you can find them.

**Leidy:** Yeah. Yeah, that's a fantastic point and I think there's the programs that have done a good job of kind of highlighting sustainability and organizing around this theme of sustainability but then I know, like Clemson we don't really have any masters degrees that say sustainability, but I know you could get a great experience here, depending on what you wanted to do, just sampling courses from different departments. So I think if you're like geographically constrained and you say, "Oh, I live in Connecticut but Arizona State has this great program," well I wouldn't be surprised if some university by you in Connecticut has the same, can give you the same learning experience. They just might not have the name.

**Anthony:** Okay, so what is your ultimate goal Leidy in doing your research? Like you're doing research, you're trying to find out information, what are you looking to figure out?

**Leidy:** So my goal for the research is to have as big an impact as possible, at the same time being realistic about where I can have that impact. I'm uniquely trained at engineering. I think that I can, I understand the engineering side of things. I've done some of the background work to develop competencies there. So I identify that as an area where the work that I do can have a big impact on the real world.

One of the challenges with research is ultimately what you're trying to do is create knowledge and it sometimes takes a little while or sometimes it's not really clear whether the knowledge you're creating is helpful. I think as engineers we want to create knowledge that's pretty useful, but it is, I would say the ultimate goal is to have as big a positive impact as possible on the decision making for sustainability of engineering types.

**Anthony:** Okay, great. So what I'm going to do now everyone, we're going to get into our kind of career changing tip portion of the show and I'm going to have Leidy stay with us and we'll come back in a minute for that.

## **Anthony's Career Changing Tip:**

**Anthony:** Alright, now it's time for our career changing tip, and in this segment of the show I typically try to give the listeners something that they can do to make a change in their career or in their life,

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based on the topic of the show for that day. And today we're talking about sustainability and I have Dr. Leidy Klotz from Clemson University here. So I'm going to ask Leidy to just throw out something to help people learn a little bit more about sustainability and how they can implement it into their lives. Leidy.

**Leidy:** The biggest advice I would have is just to go for it and do it. I mean we need engineers doing this. We need engineers, we need the engineering mindset working on sustainability issues. Some specific, tangible action you could take is there's a wonderful book that I read called **Carbon Zero Cities, by Alex Steffen**. If you just Google **Carbon Zero Cities**, it'll come up. You can also buy it on Amazon for like \$4.99, but the author - and I don't get any proceeds or anything - the author is a self proclaimed futurist, and what he does is like paint this vision of what cities could look like in the future but it's very grounded in reality. It's grounded in like what are some of the best things that are happening around the world right now. It's just a fascinating read for someone who's interested in engineering and I think will give you a lot of ideas about where things are going, where things already are and how you could contribute to a more sustainable future.

**Anthony:** Okay, great. And before I let Leidy go and we end the show, I just want to give you a little bit more information that you can look into for this topic. You can check out Leidy's resource website, which is [essoresearch.org](http://essoresearch.org). Leidy has a blog there and he blogs about sustainability and also I think does it in a way that's kind of engaging and it's not, because he does research, he does data, but he kind of puts stories into it. I think you'll find it to be interesting and you'll also be able to watch a video of him scoring a goal.

**Leidy:** For Lafayette.

**Anthony:** For Lafayette. That's worth a visit. And also, I will link to any references or items that we talked about, I'll put them into the show notes, including the book that Leidy just mentioned and the show notes for this show will be at [engineeringcareercoach.com/leidy](http://engineeringcareercoach.com/leidy). So you'll be able to get the notes and be able to listen to the show there.

**Anthony's Closing Remarks:** And with that I want to thank you all for tuning in. I hope you really take the time to think about sustainability, and those of you out there that want to get into this field, like Leidy said, you just have to do it. Grab the book that he referenced. Learn about it. And you may have to create your own job. It may not just be about trying to find a job that exists for you in sustainability, but it's getting onboard and creating your own way. And like Leidy said, this is a young industry so you can become an expert at a very young age because not a lot of people know a lot about these things and that's why Leidy and others are doing research on it. So be sure to visit my website for engineering career resources at [engineeringcareercoach.com](http://engineeringcareercoach.com) and once again thanks to



Leidy and we'll catch everyone on the next session of *The Engineering Career Coach Podcast*.

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