

CSX

VO

On Fast Forward we've met Environmental Engineers, Process Engineers, Acoustics Engineers, Mechanical Engineers, Electrical Engineers, Structural Design Engineers, Technical Development Engineers, Flight Control Systems Engineers, Agricultural Engineers, Civil Engineers and Industrial Engineers, just to name a few.

But we just found 1 kind of engineer we haven't met yet! Today's the day!

Today Fast Forward is visiting CSX, a company that combines cutting-edge technology with one of the nation's most established modes of transportation. CSX is the biggest railroad east of the Mississippi, with more than 3,000 people across the state of Georgia working on the railroad. So I'll let them tell you a little more about the place.

JOEY

CSX hauls freight anywhere from grain, ethanol, propane, gasoline, plastics. Just about anything that you would come in contact with on a daily basis was hauled by a train across the United States.

TEKECIA

We mainly deliver for the east coast. We run as far south as Florida all the way up to Canada.

CULLEN

Everything you see within this room, within your classrooms, where you're at, at one time or one form was probably riding on one of our trains.

TEKECIA

And it's how I make my living.

VO

Nice! So how big *is* this operation?

CRAIG

CSX operates 36,000 miles of track throughout its 23-state network.

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36,000 miles? That's a lot of track to...well, keep track of. And CSX employees actually weld all of those rails together. Little help?

LARRY

That's Cullen's expertise, there.

VO

Then he's the perfect person to tell us about the different types of welding.

CULLEN

Electrical welding is what everybody thinks of when we talk about welding. That's when they're striking the arc and you see the guys wearing the welding hoods and what not. Thermite welding is pretty railroad specific.

VO

Thermite welding?

CULLEN

It's actually a chemical reaction. What we do is, in order to make the rail bond we have to heat the rail ends up to 800 degrees and that gets the metal consistency where we need to let the molten steel bond to it, but the actual thermite itself is a powder. It's aluminum oxide and iron ore powder, and we use a magnesium starter and that ignites it and once it ignites the chemical reaction actually produces so much heat that it melts the steel. The pure iron will drop down into the mold in between the two rails, fuse them together and makes our rail, the clickity clack and the joints that are out there, we get rid of all that, we make it a smooth transition, so no more speed bumps for trains.

VO

Now if only you could do something about those speed traps! So tell me about the trains.

JOEY

The lightest rail car that we have is over 15 tons and that is one car. So a standard freight train could haul over 100 cars, could be tens of thousands of tons.

HESS

CSX trains depending on the track, passenger trains can travel up to 79 miles an hour.

JOEY

The larger locomotives are rated for up to 4000 horsepower. Your smaller locomotives can range anywhere from 1000 to 2000 horsepower.

VO

That's a lot of horsepower. And speaking of that...

JERMAINE

Time for a teachable moment.

VO

Horsepower is simply a way of measuring power. And to understand exactly what power is, you need to start with force, which is the push or pull exerted on an object, measured in newtons. When you measure that force over a distance, such as the energy it takes to move a 50,000-ton train 1,000 miles, you get the work, measured in Joules. And when you measure that work over a period of time, you get the power. Or in this case horsepower.

That's a cow.

Better. Anyhow, inventor James Watt first coined the term "horsepower" back in the 18th century while looking for a way to measure the power of his steam engine. Because there was no accepted unit of measure at the time, he used horses as a benchmark for comparison. Therefore, one unit of horsepower equals the average effort generated by a single draft horse.

Later, a different unit of measure was developed that could be used in conjunction with the metric system. This new unit was named the Watt, after James Watt, and 761 Watts are about equal to 1 unit of horsepower.

Sorry guys.

So what kinds of jobs do you have here at CSX?

CRAIG

The railroad has jobs available for all aspects of talent. We look for people that are high school graduates all the way up to college graduates.

TEKECIA

We can start off with conductors, yard masters, you have train masters, you have terminal superintendents, division managers, and you even have other departments such as safety, health and environment. We even have personnel here that do personal training for us, so a lot of opportunity.

VO

And CSX is also a great place to work if your future includes military service.

CRAIG

Military has become a very important part of CSX, and the people that come from the military have a discipline that is needed to work in the railroad industry.

VO

In fact, 1 out of every 5 CSX employees has a military background. Anyone?

TEKECIA

I am actually in the army reserve.

HESS

The US Army National Guard.

CULLEN

I went in the military. I got the GI bill. And now I'm utilizing it. I'm working here for CSX and getting my college paid for by the GI bill.

VO

So after high school whether you're heading to the military, or college, or getting straight to work, CSX could work for you.

LARRY

I've really enjoyed watching the young people come through here. We have men as well as women that are very well trained and good at their jobs.

CRAIG

You know the biggest benefit of working for CSX is that you know that you're working for a company that's making a contribution, a company that is really helping to drive our economy. As the railroad goes so does our American economy and so does the Georgia economy.

TEKECIA

I think the opportunities here are beyond the limits.

VO

Limits? Never paid them much attention. Which is probably why Fast Forward and CSX are such a great match! Right now I've got a train to catch, but I'll see you on another episode of Fast Forward.