

Potential and Kinetic Energy

We're going to talk about kinetic energy and potential energy. Let's start with potential energy. Davis, what is potential energy?

Energy that is stored or energy that's in position.

What do you mean? So stored would mean something like a battery. So a battery has stored energy, it has chemical energy in it. Chemical energy is one type of potential energy. So it's got energy in the batteries, the chemicals, that are ready to be used. They're potentially ready to be used. That's one form of potential energy. Or potential energy, like you said, has to do with position. So if we're talking about a basketball and I take the basketball and we put it right on the ground, what amount of potential energy does it have?

None whatsoever. Now if I take it and we start to bring it up higher and higher, then it has some potential energy. And as it goes higher it has more and more and more. The higher it goes, the more distance gravity has to work on it. So as the potential energy increases we get to a certain point where if I were to drop it and it begins to fall, then the potential energy begins to decrease. And then what is kinetic energy?

Moving energy.

Yeah, energy of movement, energy and motion. So as we drop it the potential energy begins to drop, but the kinetic energy begins to rise, or increase. So potential energy begins to increase more and more and more and then we drop it. Potential energy decreases and the kinetic energy increases.

So another classic way to look at this is through a roller coaster. So a roller coaster, for example, will start out at the top of this first hill. And at that point, as it begins to go higher and higher and higher, the potential energy grows and grows and grows until you reach the very top of that hill. This is where you've got the maximum potential energy because that roller coaster is at the very highest point. Then as the roller coaster heads downhill the potential energy begins to decrease, but the kinetic energy is increasing. So the train, or the roller coaster, speeds up. And then at the bottom of that hill, the maximum kinetic energy is reached and little potential energy is there. And then again, the opposite will occur as the potential energy begins to grow as the roller coaster begins to climb the next hill. So the kinetic energy then will-- once it reaches up to the top of that hill-- the kinetic energy will take over, or the potential energy will then decrease. The kinetic energy will propel it all the way around that next loop. And then as that roller coaster enters that loop, it has enough kinetic energy to make its way all the way around the loop, but not much potential energy. So the potential energy level at that point then builds as the roller coaster speeds to the top of the loop, but it is soon converted back to kinetic energy as the roller coaster then leaves and stops.
