CLAIMS

WHAT IS CLAIMED IS:

1. A tape adhesion test system, comprising:

means for securing a first layer of tape, wherein the first layer of tape is adhered to a wire conductor through an adhesive bond;

means for applying a pulling force to a second layer of tape adhered to the first layer of tape through an adhesive bond; and

means for measuring the pulling force when one or more ~~the~~ adhesive bonds breaks.

~~2. The tape adhesion test system of claim 1, wherein the first layer of tape is adhered to a wire conductor.~~

~~3~~2. The tape adhesion test system of claim ~~2~~1, further comprising means for measuring an adhesion of the first layer of tape to the wire conductor.

~~4~~3. The tape adhesion test system of claim ~~2~~1, wherein the wire conductor comprises a magnet wire.

~~5~~4. The tape adhesion test system of claim ~~2~~1, further comprising means for relating the measured pulling force to properties of a magnet wire.

~~6~~5. The tape adhesion test system of claim ~~2~~1, further comprising means for relating the measured pulling force to a manufacturing step for a magnet wire.

~~7~~6. The tape adhesion test system of claim ~~6~~5, further comprising a computing device for measuring the pulling force and relating the pulling force to properties and manufacturing steps of a magnet wire.

~~8~~7. A test fixture, comprising:

chucks for securing each end of a tape-wrapped wire;

a clamp for applying a pulling force to an outer layer of tape of the tape-wrapped wire;

a recorder for storing a pulling force value when an adhesive bond between the outer layer of tape and an inner layer of tape separates.

~~9~~8. The test fixture of claim ~~8~~7, further comprising a hinged bracket to hold the chucks, the hinged bracket having freedom to tilt about a pivot when the pulling force is applied to the outer layer of tape of the tape-wrapped wire.

~~10~~9. The test fixture of claim ~~9~~8, further comprising a slide coupled to the hinged bracket, the hinged bracket having freedom to translate along the slide when the pulling force is applied to the outer layer of tape of the tape-wrapped wire.

~~11~~10. The test fixture of claim ~~9~~8, further comprising a hub coupled to the hinged bracket, the hinged bracket having freedom to rotate about an axis of the hub when the pulling force is applied to the outer layer of tape of the tape-wrapped wire.

~~12~~11. A method, comprising:

placing a sample of a tape-wrapped wire into a rotatable chuck;

attaching a pull tester to an outer layer of tape adhered to an inner layer of tape of the tape-wrapped wire;

increasing a pull force of the pull tester until the wire begins to spin;

measuring the pull force when the wire begins to spin to determine an adhesive bond strength between the outer layer of tape and the inner layer of tape.

~~13~~12. The method of claim ~~12~~11, further comprising quantifying the adhesive bond strength between the outer layer of tape and the inner layer of tape and quantifying the adhesive bond strength between the inner layer of tape and a metallic wire conductor of the tape-wrapped wire.

~~14~~13. The method of claim ~~12~~11, further comprising improving a design of the tape-wrapped wire based on the measured pull force.

~~15~~14. The method of claim ~~12~~11, further comprising improving a manufacturing process of the tape-wrapped wire based on the measured pull force.

~~16~~15. The method of claim ~~15~~14, further comprising correlating the measured pull force to one or more electrical properties of the sample of the tape-wrapped wire to improve the manufacturing process.

~~17~~16. The method of claim ~~15~~14, further comprising determining an oven temperature and a line speed setting for manufacture of the tape-wrapped wire based on the measured pull force.

~~18~~17. The method of claim ~~15~~14, further comprising selecting a tape adhesive based on the measured pull force.

~~19~~18. The method of claim ~~15~~14, further comprising changing a wrapping angle of tape being applied to the tape-wrapped wire based on the measured pull force.

~~20~~19. The method of claim ~~15~~14, further comprising changing a helix spacing of the tape-wrapped wire based on the measured pull force.