CLAIMS

Claim 1. An integrated cable system with intelligent monitoring features, comprising:

a. a multi-stranded cable including synthetic fibers, wherein a majority of a tensile load placed on said cable is carried by said synthetic fibers;

b. said cable including a payload end and an extraction point distal to said payload end;

c. an intelligent cable module connected to said cable;

d. an instrument package connected to said intelligent cable module, said instrument package including a processor;

e. said instrument package including a plurality of load sensors for a plurality of said strands, with each of said load sensors being configured to measure a load on one of said strands; and

f. a communication link contained within said intelligent cable module, wherein said communication link is configured to transmit information from said processor.

Claim 2. The integrated cable system as recited in claim 1, wherein:

a. said instrument package includes a measurement system configured to determine a position and orientation of said intelligent cable module; and

b. said communication link is configured to transmit said position and orientation of said intelligent cable module.

Claim 3. The integrated cable system as recited in claim 1, wherein said communication link comprises an electrical connection through said cable to an extraction point.

Claim 4. The integrated cable system as recited in claim 2, wherein said communication link comprises an electrical connection through said cable to an extraction point.

Claim 5. An integrated cable system as recited in claim 2, wherein said instrumentation package includes a plurality of ring laser assemblies.

Claim 6. The integrated cable system as recited in claim 1, wherein said instrument package further comprises a memory.

Claim 7. The integrated cable system as recited in claim 6, wherein said memory is configured to store information obtained from said load sensors.

Claim 8. The integrated cable system as recited in claim 7, wherein said intelligent cable module further comprises a battery supplying power to said instrument package.

Claim 9. The integrated cable system as recited in claim 1, wherein said intelligent cable module includes a memory for storing data.

Claim 10. The integrated cable system as recited in claim 1, wherein a load sensor is provided for each strand.

Claim 11. An integrated cable system with intelligent monitoring features, comprising:

a. a multi-stranded cable including a payload end and a second end;

b. an intelligent cable module connected to said cable between said payload end and said second end;

c. said intelligent cable module including an instrument package, said instrument package including a processor;

d. said instrument package including a plurality of load sensors for a plurality of said strands, with each of said load sensors being configured to measure a load on one of said strands; and

e. a communication link contained within said instrument package, wherein said communication link is configured to transmit information from said processor.

Claim 12. The integrated cable system as recited in claim 11, wherein:

a. said instrument package includes a measurement system configured to determine a position and orientation of said intelligent cable module; and

b. said communication link is configured to transmit said position and orientation of said intelligent cable module.

Claim 13. The integrated cable system as recited in claim 11, wherein said communication link comprises an electrical connection through said cable to an extraction point.

Claim 14. The integrated cable system as recited in claim 12, wherein said communication link comprises an electrical connection through said cable to an extraction point.

Claim 15. An integrated cable system as recited in claim 12, wherein said instrumentation package includes a plurality of ring laser assemblies.

Claim 16. The integrated cable system as recited in claim 11, wherein said instrument package further comprises a memory.

Claim 17. The integrated cable system as recited in claim 16, wherein said memory is configured to store information obtained from said load sensors.

Claim 18. The integrated cable system as recited in claim 17, wherein said intelligent cable module further comprises a battery supplying power to said instrument package.

Claim 19. The integrated cable system as recited in claim 11, wherein said intelligent cable module includes a memory for storing data.

Claim 20. The integrated cable system as recited in claim 11, wherein a load sensor is provided for each strand.