## Summary of the Invention

[0010] According to an aspect, there is provided in a system for placing collated sheets into an envelope, a central controller configured to communicate through a framed network fieldbus communication protocol for sensing system parameters and for moving said collated sheets toward said envelope in real time response to said sensing.

[0010a] Embodiments of the invention provide apparatuses for stuffing envelopes and methods of controlling same. Consistent with one embodiment of the invention, the apparatus includes a plurality of prime movers, a plurality of sensors disposed throughout the apparatus, and a central controller. The plurality of prime movers, the plurality of sensors and the central controller are operably interconnected such that the central controller directly receives signals from the plurality of sensors and from the plurality of prime movers for real-time control of at least one prime mover from the plurality of prime movers based upon determined movement of at least one of a discrete sheet of material, a stack of discrete sheets of material or a stuffed envelope through at least a portion of the apparatus. In those embodiments, the plurality of prime movers, the plurality of sensors and the central controller may be configured to be controlled and/or communicate through an EtherCAT® protocol. Specifically, the EtherCAT® protocol may be an Ethernet® based fieldbus protocol in which EtherCAT® enabled devices read data addressed to them in a frame while passing the frame through the device. Input data from that EtherCAT® enabled device may be inserted into the frame while the frame passes through the device. Accordingly, the apparatus is capable of controlling movement of a web, discrete sheet of material, or a stack of such materials based on input directly received by the central controller and associated with movement of a discrete sheet of material, a stack of discrete sheets of material or a stuffed envelope that is downstream from the location of controlling action (e.g., corrective action).

[0011] In some embodiments, a method of controlling an apparatus configured to stuff envelopes with a central controller of the type that includes a processing unit and a memory is provided. The method includes communicably coupling a plurality of prime movers of the apparatus and a plurality of sensors of the apparatus to the central controller and receiving signals from the plurality of prime movers and the plurality of sensors at the central controller. The method further includes determining the movement of at least one of a discrete sheet of material, a stack of discrete sheets of material, and a stuffed envelope through at least a portion of the apparatus and selectively controlling the operation of at least one prime mover from the plurality of prime movers in real-time based upon the determined movement.

[0012] Such apparatuses and methods are particularly useful in a paper converting and envelope stuffing system contemplating improved paper converting and sheet inserting apparatuses and methods, modular based operation, and/or having improved paper handling apparatuses, servo driven components, improved sensor density as well as improved control