

Envelope Control System For Manbasket Applications

The Kar-Tech envelope control system is a microprocessor based control package designed for use on equipment, such as, aerial work platforms, cranes, and fire trucks. The system continuously monitors the dynamic load at the end of the boom and restricts boom functions when necessary to insure continued operation only within a safe operating range, or “envelope”, as specified by the manufacturer.

The load at the end of the boom, ie. the man or men in the basket, plus any equipment they have with them, is static, but becomes dynamic when the boom is raised or lowered, extended or retracted, or rotated left or right.

As the load becomes dynamic, the center of gravity of the machine changes. Exceeding the maximum limits for the boom extension, elevation or rotation, given the load at the end of the boom, could cause a machine to loose its footings and tip over. The consequences of such an event can be catastrophic. Personal injury, death, equipment damage, property damage, and law suits may result.

The envelope control system is designed to offer a built-in safeguard against such incidents. The system takes into account the geometry of the machine and utilizes sensor inputs to continually calculate the dynamic load, as the boom is extended and retracted, raised and lowered, or rotated in either direction. It compares this value to maximum load parameters specified by the manufacturer.

If the envelope control system calculates that the dynamic load, based on the extension, elevation and rotation of the boom, is approaching the maximum safe load limit, an audible and/or visual signal is given to the operator. (Most manbasket applications have operator stations in the basket, as well as, on the vehicle, itself. Either can take priority control in an emergency situation. The envelope control system is generally tied into both stations.)

If the boom is extended, raised or rotated to a point where the dynamic load has reached or exceeded the safe load limits, the envelope control system will continue to signal the operator, but also disable certain functions of the machine. The operator can only use the remaining functions to re-position the boom to get back into the safe operating envelope.

For more information, or to discuss a specific application, contact Kar-Tech’s sales department on 262.646.9444 or at sales@kar-tech.com.

