

Abstract

An autonomous vessel and method for maintaining precise position or trajectory during marine operations, such as cable or pipe laying or offshore construction and installation, are disclosed. The vessel includes multiple mooring lines anchored externally, a winch system with tension sensors, a position sensor, and a control system. The control system processes positional and tension data to detect deviations caused by environmental forces like wind, waves or currents. In response, it actuates the winch system to adjust mooring line lengths, counteracting forces and enabling controlled maneuvering within the mooring spread. An optional artificial intelligence module learns from historical data to predict dynamics and optimize adjustments along predefined waypoints. This reduces fuel use, enhances accuracy, and minimizes risks compared to conventional dynamic positioning systems. Applicable to vessels like barges or installation platforms.

[Figure 1]