

Abstract

The invention provides a power storage and supply method and system for a drilling rig. The system comprises a primary common direct current (DC) bus, at least one secondary DC bus, at least one bi-directional DC-to-DC converter connected between the primary common DC bus and the secondary DC bus, at least one motor group each connected to the secondary DC bus through a DC-to-AC inverter; and an Energy Storage System (ESS) configured to be charged by regenerative energy from at least one motor group and discharge power to at least one motor group through the primary common DC bus and the bi-directional DC-to-DC converter. The system may further comprise a bi-directional AC-to-DC converter between the primary DC bus and an AC bus, wherein the ESS is further configured to be charged by regenerative energy generated during lowering operation of a jacking system for the drilling rig, wherein the jacking system is connected to the AC bus.

(Figure 1)