up to 100 % of the riser tensioning capacity requirement expected throughout the rigs estimated lifetime.

Summary of the invention

The above-identified objects are achieved by applying the principal idea of switching between a system through which a relatively small amount of fluids flow, resulting in a correspondingly small gas compression, and a system through which a relatively large amount of fluids flow, resulting in a correspondingly large fluid compression.

The inventive principal idea is achieved by a hydraulic cylinder unit in accordance with claim 1 when connected to a wire line riser tensioning system. The invention also concerns a method for switching a hydraulic cylinder unit between a hydraulic cylinder unit with low tension capabilities and a hydraulic cylinder unit with high tension capabilities in accordance with claim 10 and a wire line riser tensioning system for a riser connected to a floating platform in accordance with claim 11. Further beneficial features are defined in the remaining dependent claims.

In particular, the invention concerns a hydraulic cylinder unit for connection to a wire line riser tensioner system, comprising
- a hydraulic cylinder being separated in a first cylinder chamber and a second cylinder chamber by at least one cylinder piston comprising a piston rod and a piston head,
- a low pressure tank having a desired pressure,
- at least one first conduit arranged to provide fluid communication means between the low pressure tank and the first cylinder chamber, wherein the low pressure tank is a closed cylinder into which the first conduit is inserted,
- a high pressure fluid reservoir, and
- at least one second conduit being arranged to provide fluid communication means between the high pressure fluid reservoir and the second cylinder chamber.

The inventive cylinder unit further comprises
- at least one feedback conduit being arranged to provide direct fluid communication between the first cylinder chamber and the second cylinder chamber, and

- valve means comprising at least one valve, the valve means being in fluid communication with the at least one second conduit and the at least one feedback conduit, and arranged to provide reversible switching between the following alternative configurations:
  - fluid obstruction between the low pressure tank and the first cylinder chamber, and fluid communication between the first cylinder chamber and the second cylinder chamber via the at least one feedback conduit, and
  - fluid obstruction between the first cylinder chamber and the second cylinder chamber, and fluid communication between the low pressure tank and the first cylinder chamber via the at least one first conduit.

At least one of the valves constituting the valve means is preferably arranged in the at least one first conduit and may be either a three-way valve or at least two two-way valves, or a combination thereof. In the case of two-way valves, at least one valve may be arranged in fluid communication on the at least one first conduit and at least one valve may be arranged in fluid communication on the at least one feedback conduit.

Note that there are no restrictions on the length of the above mentioned conduits. Consequently, the invention also covers the embodiment in which the cylinder / tank / reservoir are arranged in immediate proximity to each other to allow the desired fluid communication.

Furthermore, the piston rod may in one preferred embodiment be arranged in the first cylinder chamber.

For the receival of a riser tensioning cable that is intended to be connected to one end of a riser during use, at least one first sheave or upper sheave is advantageously arranged at one of the two axial sides of the piston cylinder, in addition to at least one second sheave or lower sheave arranged at the other of the two axial sides of the piston cylinder. In a preferred embodiment of the invention at least two first sheaves and at least two second sheaves are arranged at the two axial sides of the piston cylinder.

In another embodiment of the invention the high pressure fluid reservoir is being separated in a high pressure gas end and a high pressure fluid end by a