Claims

1. Hydrocarbon production facility, comprising:
   - a well (22) of hydrocarbons;
   - a hydrocarbon production line comprising:
     * in the well (22), a production tube (24), and
     * on the surface, an evacuation tube (26) from the production tube (24);
   - on the surface, a source (34) of pressurized gas (38);
   - a pump (40) for circulation of hydrocarbon from the well (22) to the hydrocarbon production line;
   - an injection line (36) of pressurized gas (38) in the hydrocarbon production line, the injection line (36) being connected to the source (34) of pressurized gas (38), and opening into the evacuation tube (26) of the production line, downstream of the circulation pump (40);
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   - a pneumatic motor (30) for supplying power to the pump (40), disposed on the injection line (36) of the pressurized gas (38) and adapted to be rotated by expansion of the pressurized gas (38).
2. A facility according to claim 1, comprising a mechanical transmission shaft (42) connecting the pneumatic motor (30) to the pump (40).
3. A facility according to claim 1, where the pneumatic motor (30) is an electric generator.
4. A facility according to claims 1 to 3, wherein the pump (40) in the well (22) is an electric submersible type or a progressive cavity type.
5. A facility according to claims 1 to 4, wherein the pump (40) is disposed in the well bottom hole.
6. A facility according to claim 5, wherein the pneumatic motor (30) is provided with a diversion.
7. A facility according to claim 5, wherein the injection line (36) of pressurized gas (38) further includes one or more boosters to increase the pressure of the pressurized gas upstream of the pneumatic motor (30).
8. A facility according to claim 5, wherein the facility is configured to be activated by injection of pressurized gas into the production line.

9. A facility according to claim 5, wherein the facility is configured to be remoted from any power generation site location or inhabited place.
10. A method of operating a hydrocarbon (80) production well (22) activated by gas injection, using the hydrocarbon production facility according to one of the claims 1 to 9 and comprising the well (22), the method comprising:
    a) providing a pressurized gas (38) from the pressurized gas source (34) on the surface of the facility;
    b) recovering energy by the expansion of the pressurized gas (38) using the facility pneumatic motor (30);
    c) actuating the pump (40) for circulation of hydrocarbon from the well (22) using the energy recovered in step b);
    d) injecting an expanded pressurized gas (38) in a hydrocarbon production line of the facility.
11. A method according to claim 10, wherein the pressurized gas (28) is at a pressure higher than or equal to 70 bars prior to expansion.
12. A method according to claim 10 or 11, wherein the pressurized gas (38) is expanded by the pneumatic motor (30) at a pressure less than or equal to 30 bars.
13. A method of operating a hydrocarbon (80) production well (22) activated by gas injection, using the hydrocarbon production facility according to one of the claims 1 to 9, the method making use of:
    - a well (22) of hydrocarbons;
    - a hydrocarbon production line comprising:
        * in the well (22), a production tube (24), and
        * on the surface, an evacuation tube (26) from the production tube (24);
    - on the surface, a source (34) of pressurized gas (38);
    - an injection line (36) of pressurized gas (38) in the hydrocarbon production line, the injection line (36) being connected to the source (34) of pressurized gas (38);

    the method comprising the upgrade of the facility by:

    - positioning a pump (40) for circulation of hydrocarbon from the well (22); and
    - positioning, on the injection line (36) of pressurized gas (38), a pneumatic motor (30) for supplying power to the pump (40), adapted to be rotated by expansion of the pressurized gas (38).