CLAIMS

1. Removable device (120) for determining the value of at least one parameter of a liquid tank (130), characterized in that it comprises:

- a means (125) for attachment to the inside of the tank, for example to a mast positioned inside the tank and in the vicinity of an upper wall (130) of said tank, said attachment means supporting:
  - a multidirectional laser emitter (110);
  - a receiver (135) of the light emitted by the laser;
  - a photodetector (140) converting the received light into an electric signal; and
- a means (145) for detecting a relief inside the tank as a function of signals converted by the photodetector;
- a means (146) for determining a topography of at least one wall of the tank as a function of at least one detected relief; and
- a means (150) for determining the value of each local deformation parameter as a function of the determined topography.

2. System (100) for determining the value of at least one parameter of a liquid storage tank, such as a local deformation of the tank, for example, characterized in that it comprises:

- a liquid storage tank (115); and
- a removable device (120) according to claim 1.

3. System (100) according to claim 2, configured to determine a deformation parameter of the tank representative of a cavity in a wall.

4. System (100) according to claim 3, configured to determine a deformation parameter of the tank representative of a cavity whose maximum dimension, along one axis, is less than one meter.

5. System (100) according to claim 4, configured to determine a deformation parameter of the tank representative of a cavity whose maximum dimension, along one axis, is less than ten centimeters.

6. System (100) according to claim 5, configured to determine a deformation parameter of the tank representative of a cavity whose maximum dimension, along one axis, is less than one centimeter.

7. System (100) according to one of claims 2 to 6, which comprises:

- a counter (155) of a number of critical deformations in the tank (115) determined by the determination means (150), this counter being configured to count the presence of a critical deformation when a deformation value measured is greater than a predefined limit value; and
- an emitter (160) of a warning when a number of critical deformations counted is greater than a defined number.

8. System (100) according to one of claims 2 to 7, wherein the means (146) for determining a topography is also configured to determine the topography of a surface of liquid in the tank, the determination means (150) determining a value representative of a volume of liquid in the tank as a function of the topography determined.

9. System (100) according to one of claims 2 to 8, wherein at least:

- the emitter (110);
- the receiver (135); and
- the photodetector (140)

are built into a housing (165) that is sealed and/or has filling material configured to limit the risk of explosions.

10. System (100) according to one of claims 2 to 9, which comprises:

- a thermally insulated housing (165) for at least:
  - the emitter (110);
  - the receiver (135); and
  - the photodetector (140); and
- a means (170) for heating the interior of the housing to a temperature corresponding to the minimum operating temperature of the emitter, receiver and photodetector.

11. System (100) according to one of claims 2 to 10, which comprises at least one additional sensor (175) capturing a value of an internal or external parameter of the tank, the value of the parameter determined by the system being determined as a function of at least one additional parameter value captured.

12. Use of the device according to claim 1 for determining the value of a mechanical property of the tank.