

## Compliant EEG cap with fluid mechanical actuators

**System:** Compliant, mechatronic system for biomedical sensor placement

### Functional principle:

- cap for electroencephalography measurement (EEG cap)
- positioning, attaching and manipulating of sensors (e. g. dry electrodes) relatively to the surface of a biologic object
- by variation of the internal pressure the fluid mechanical actuators are able to produce (according to the dimensioning) different relative movements between sensors and biological object (cp. figure)
- a predefined sensors pressing force can be adjusted by the internal pressure

### Characteristics and advantages:

- direct contact between electrodes and head surface with well-defined pressing force
- flexibility on the human machine interface
- different relative movements of electrodes by using fluid mechanical actuators
- network with integrated fluid pipes
- space for more than 150 electrodes at equidistant pitch
- by using dry electrodes the set-up time for measurement decreases, thus test persons/patients stress decreases, too
- adaptive adjustment to different head size and head morphology



Abb.: Simulation of fluid mechanical actuators and manufactured functional models with and without internal pressure, compliant EEG cap with fluid mechanical actuators for electrode positioning

### Application:

- EEG measurement in research and hospital
- new application fields, like Brain-Computer-Interface

sponsored by:

