

# CManipulator

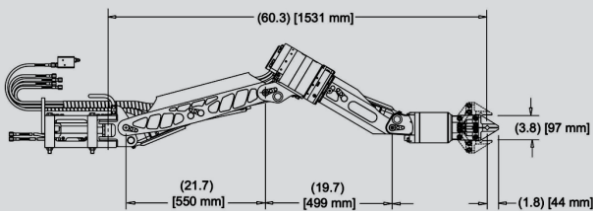
## Autonome and semi-autonome Dual-Arm-Manipulation

### System Description

The CManipulator is a deep-sea underwater robot able to autonomously detect previously defined objects, grasp them and set them down or connect them to other objects. The complete system will either act completely autonomously or semi-autonomously with an operator as supervisor. It will be able to grasp a range of different objects up to a weight of 68 kg in water.

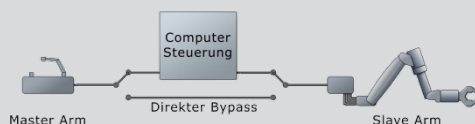
### Technical Details

- **Robot:** Deep-sea-manipulator  
Schilling Robotics; Orion 7P
- **Size:** 700 x 300 x 1050 (Stow)

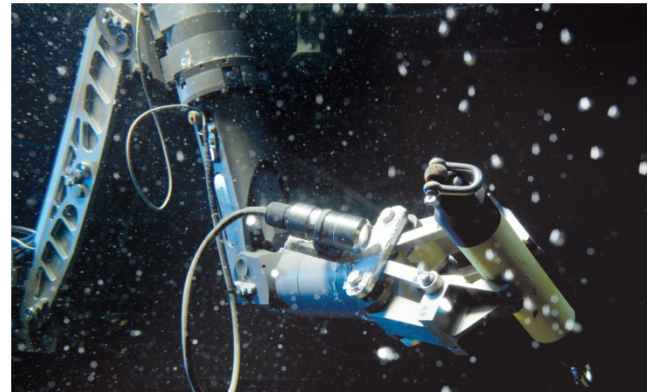


- **Weight:**
  - In air: 54 kg
  - In water: 38 kg
- **Operation depth:** 6500 m
- **Drive system:** Hydraulic pump
  - Power: 7.5 KW
  - Operating pressure: 210 bar

- **Control:**
  - CManipulator control unit placed between master and slave arm

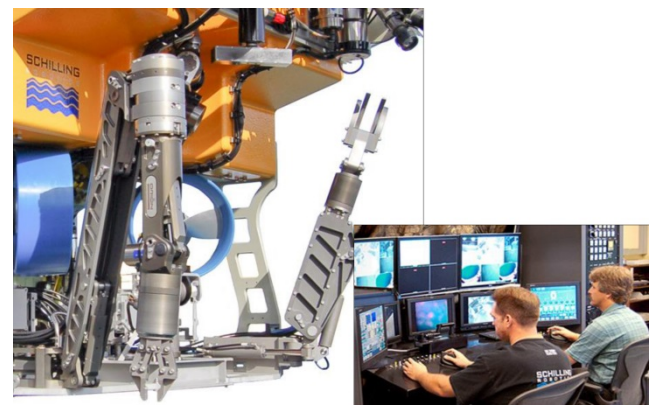


- Safety feature through direct bypass switching
- Motion control through analytical form of the inverse kinematic of the robot arm at 100  $\mu$ s calculation time
- Implementation of all movements in cartesian coordinate system



**Application:** Deep-sea applications  
e.g.: Offshore oil and gas industry

**Projects:** **CManipulator**  
Autonome Dual-Arm Manipulation  
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