The new DLR Light Weight Robot has an outstanding ratio of payload to total mass. Though it weights only 14kg, it is able to handle payloads of 14kg over the whole dynamic range. Very light gears, powerful motors and weight optimized brakes have been integrated into the robot.

Similar to the human arm, the robot has seven degrees of freedom which results in advanced flexibility in comparison to standard industrial robots. The electronics, including the power converters, is integrated into the robot arm. No bulky external rack, known from standard systems, is needed. The integrated sensors are most progressive - each of the Light Weight Robot’s joints has a motor position sensor and a sensor for joint position and joint torque. Thus the robot can be operated position, velocity and torque controlled. This results in a highly dynamical system with active vibration damping.