

DESIGN PROBLEMS FOR PARALLEL MANIPULATORS IN ASSEMBLING OPERATIONS

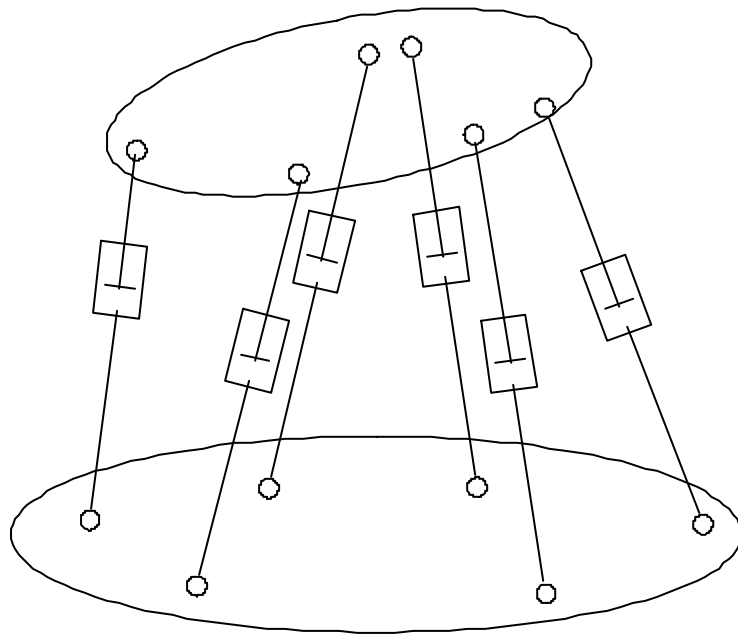
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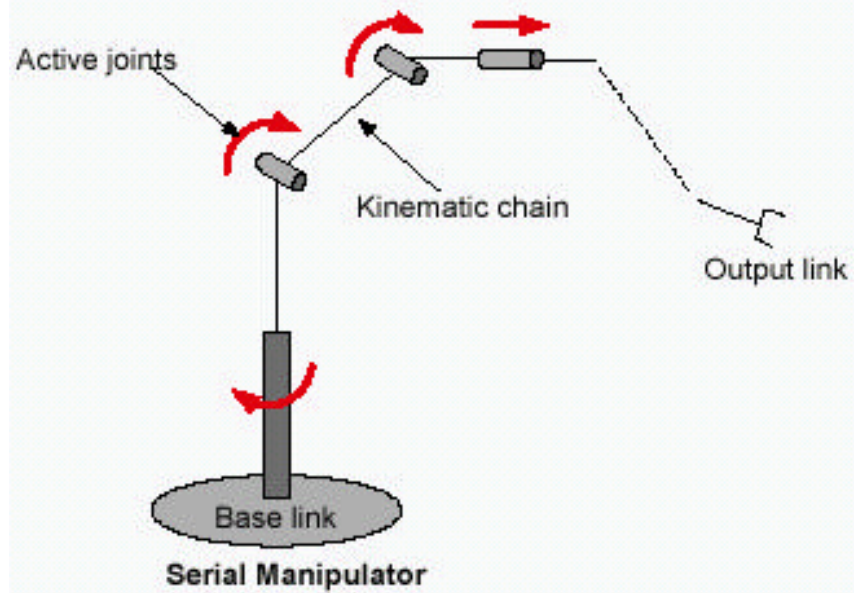


A parallel robot can be defined as
a closed-loop mechanism whose moving platform is connected to the
base by several independent kinematic chains.

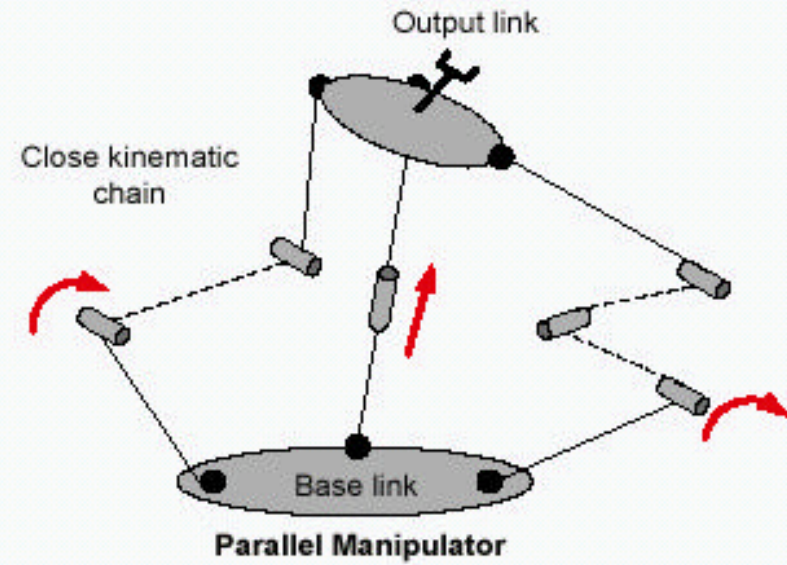
Parallel manipulators have inherent advantages with respect to serial ones:
they can be faster, stiffer, and more precise.

In this paper
basic problems concerning the use of parallel robots for industrial applications
are taken into account by also referring to design formulations.

Serial Robot



Parallel Robot



2. CURRENT PARALLEL MANIPULATORS FOR INDUSTRIAL APPLICATIONS

Parallel robots can be also used for any kind of motion simulation and guidance such as part assembly and more ...

machine tool, satellite antennas, haptic devices, vehicle suspensions, variable-geometry trusses, cable-actuated cameras, and telescope positioning systems.

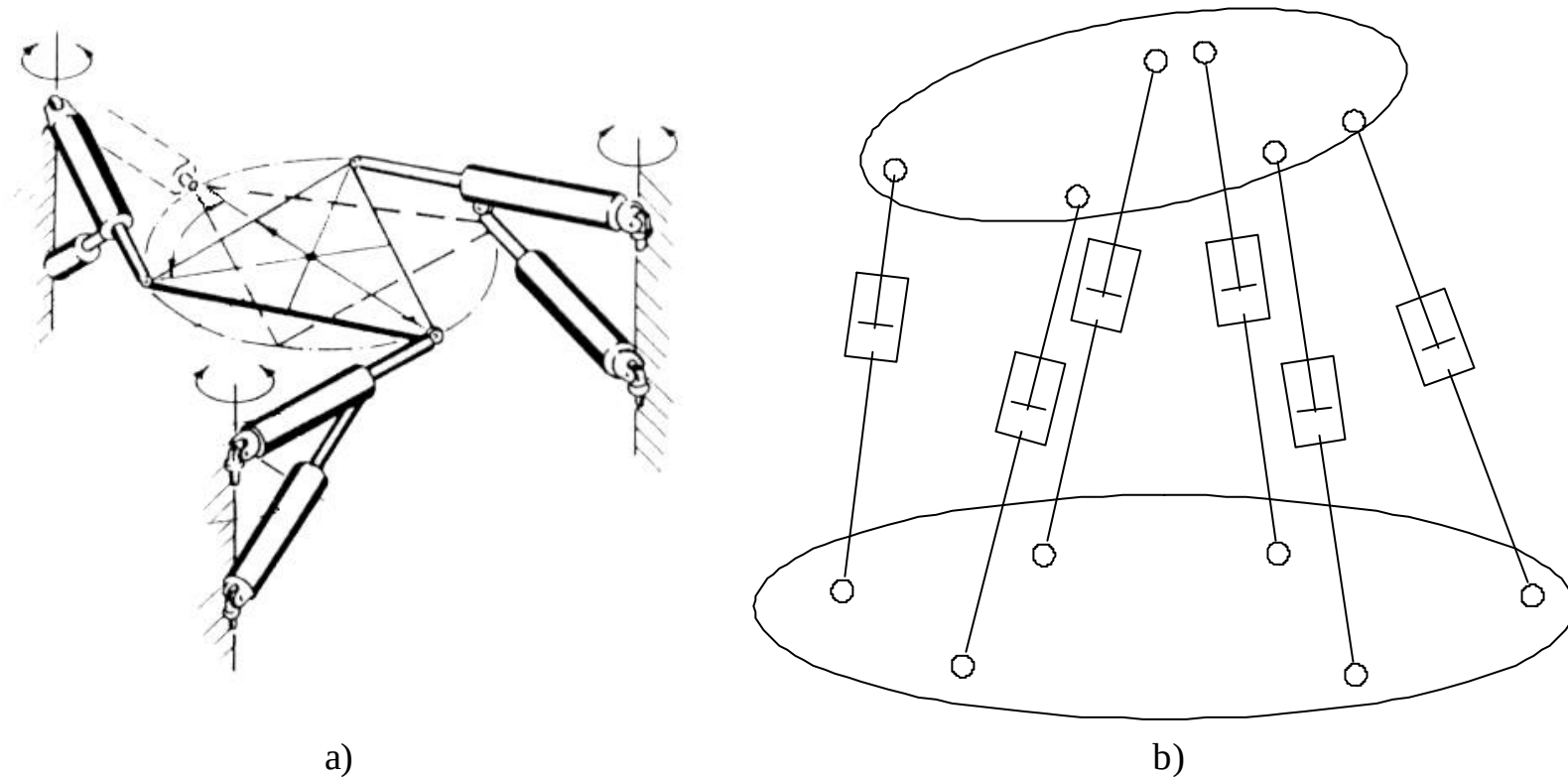
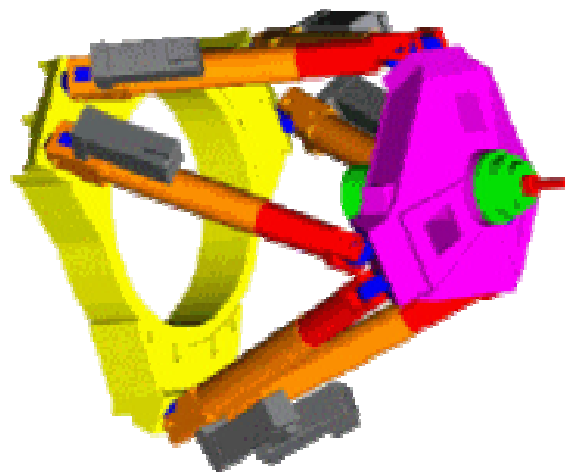


Figure 1. Gough-Stewart parallel manipulators: a) Stewart design in 1965; b) a general kinematic scheme



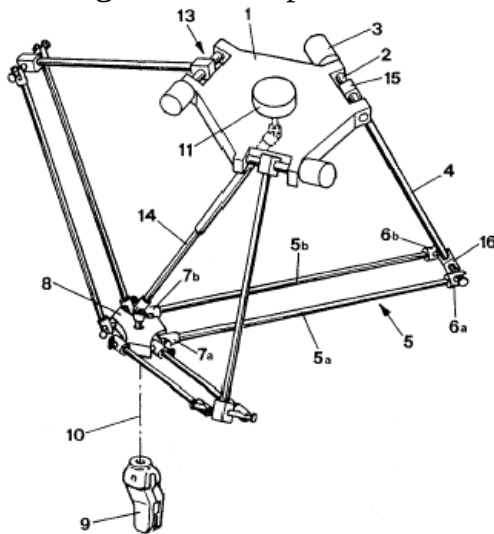
a)



b)

Figure 2. Hexapode CMW 300, (Hexapod 2003): a) a CAD scheme; b) the commercialized robot.

[VIDEO](#)



a)

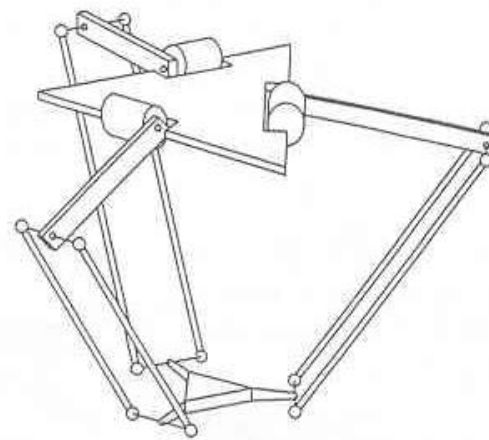


Fig. 1: A typical parallel robot

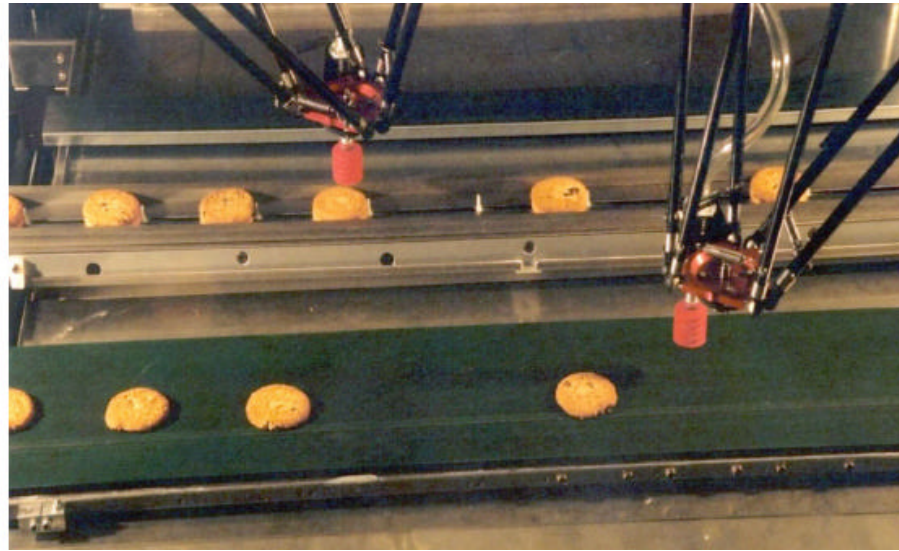


b)

Figure 3. Delta robot by ABB, (ABB 2003): a) a scheme; b) the commercialized robot.



a)



b)

Figure 4. The Delta robot by Demareux, (Demareux 2003): a) a scheme; b) a pick and place application.

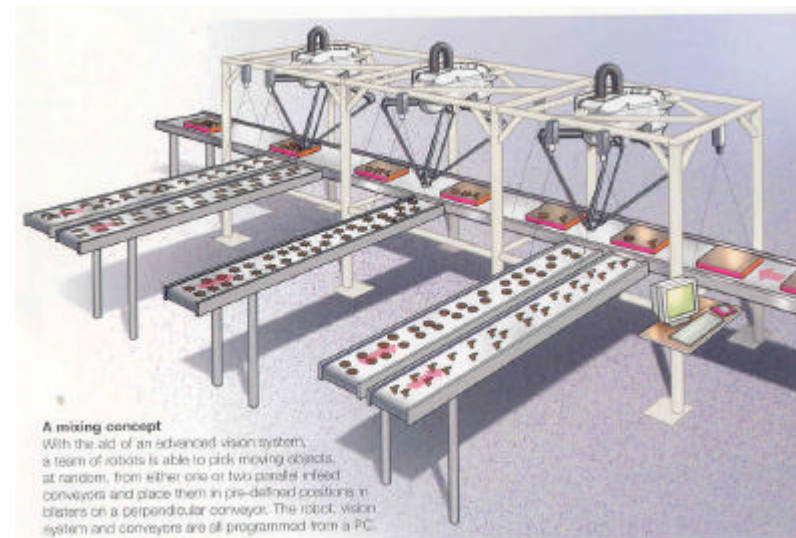
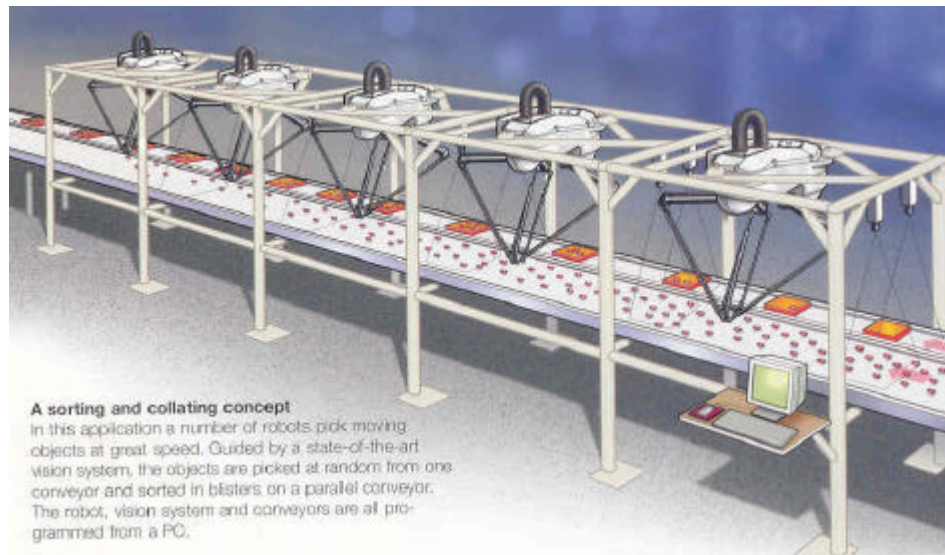




Fig. 5. The Hexabot commercialized as working table by Hexel (Hexel 2003).

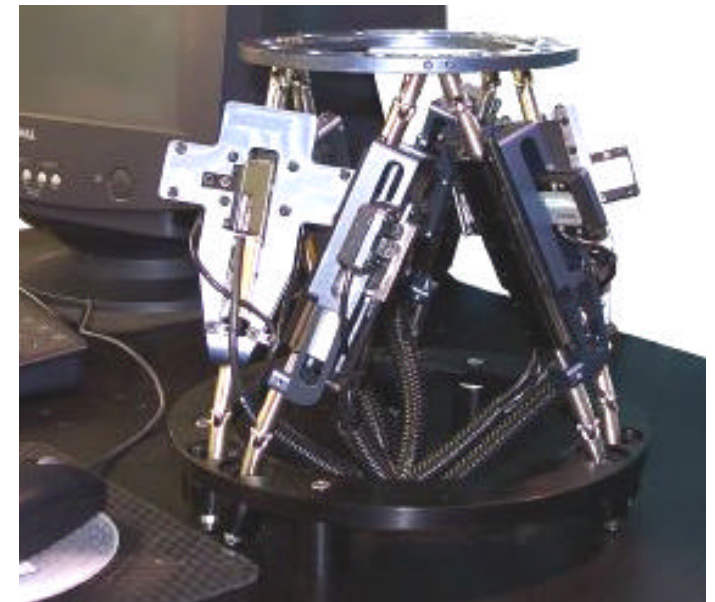


Fig. 7. The AI-Hexapod 5 by Alio, (Alio 2003).