

# Precision Machining by Local Machining Station Method

## Background and problems

- Rough positioning accuracy of robot, especially long robot arm such as space manipulator
- Machining additional small shape or repairing for large workpiece

## Solution

- Adhering on workpiece to compensate for stiffness of device (LMS: Local Machining Station) and moving small machine tool under LMS

## Advantages

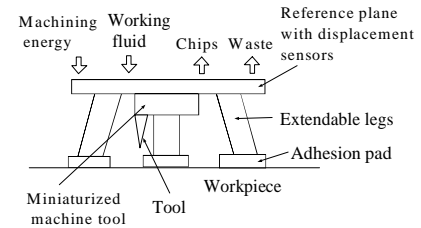
- High measurement accuracy because of restriction of measurement range
- High frequency response of machine tool
- No disturbance of displacement of small mobile machine tool with power line, coolant nozzle or conditions of workpiece

## Results

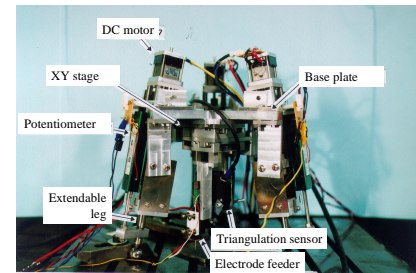
- Changeable attitude
- Machining holes with higher positioning accuracy than robot

## Applicable fields

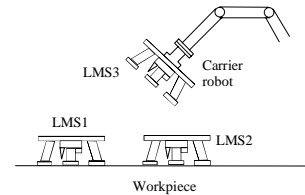
- Space manipulator
- Machining or repairing on large workpiece



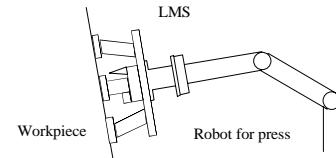
Concept of Local Machining Station (LMS)



Appearance of LMS

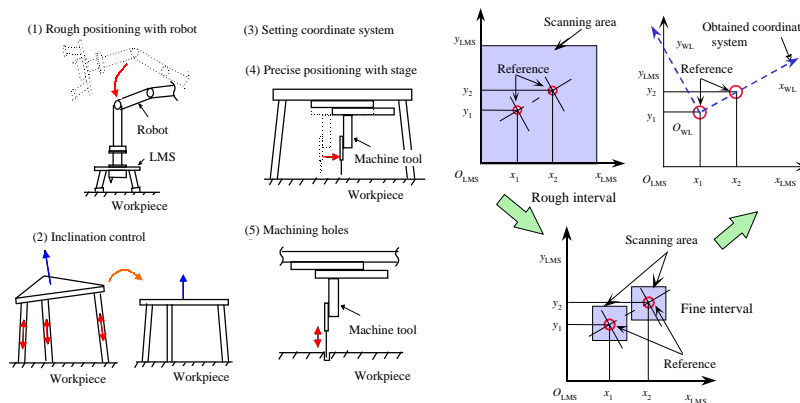


LMS as portable machine tool



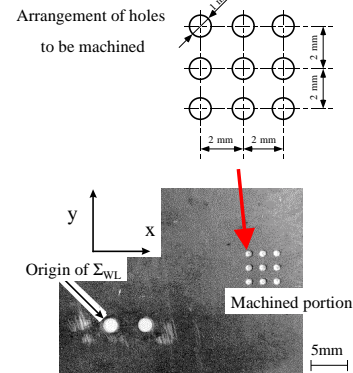
LMS as end effector of robot arm

## Usage of LMS



Machining sequence

Setting coordinate system  
by using holes as reference



	$\mu\text{m}$	Position LMS	Pitch LMS	Robot
Average		18	4	3
Std. dev.		—	3	19

Results of machining