

Saia-Burgess Dresden GmbH

A member of Industry Division / Business Unit Actuators



History – main steps

1992	<i>Founding of Saia-Burgess Electronics GmbH Dresden</i>
1992 - 1995	<i>Transfer of motor production lines from Murten to Dresden</i>
1995	<i>First linear motor (UBL)</i>
1995	<i>Reconstruction of main production shop</i>
1996	<i>First step into the automotive market (ELD)</i>
1998	<i>Establishment of JV with Smart in China</i>
2001	<i>Transfer of the automotive products within the Saia-Burgess Group and concentration on industry products</i>
2003	<i>Assembly facilities established in Poland Establishment of Saia manufacturing facility in Guangzhou/China</i>
2004	<i>Acquisition of Stegmann Actuators and Motor gearbox program</i>
2005	<i>Acquired by Johnson Electric</i>

Range of products



Linear / Rotational Stepper and Synchronous Motors



AC and DC Solenoids



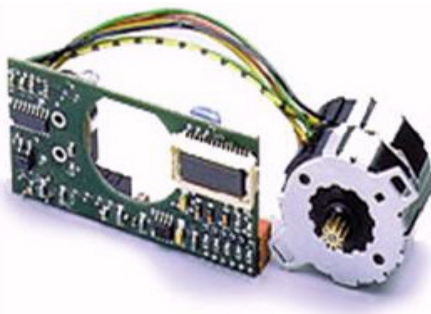
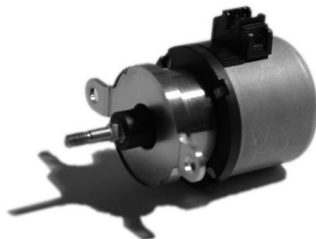
Gearboxes

Water / Gas valve actuators



Drive electronics

Subassemblies combining parts or all of the above



Medical projects

- ◆ Heparin pump for Fresenius
 - Electronic control unit
 - Gear motor with spindle drive



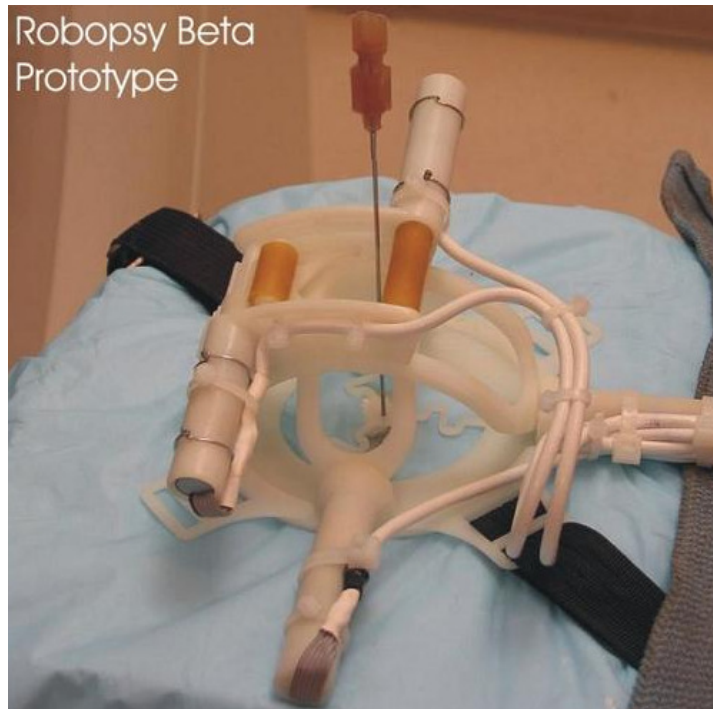
- ◆ Atomizer for drug inhalation (Microflow/Pfeiffer)
 - Dosing unit with electronic control
 - Inhalation unit with Atomizer driver



- ◆ Fresenius Medical Care
 - Tube ejector for dialysis machines

ROBOPSY

A Disposable Medical Robot for Lung Biopsies



innovating motion

Robopsy — Doctor's Problem = Engineer's Opportunity

“A small robot that sits on a patient inside the scanner that I could control remotely has the potential to drastically improve the current lung biopsy procedure”

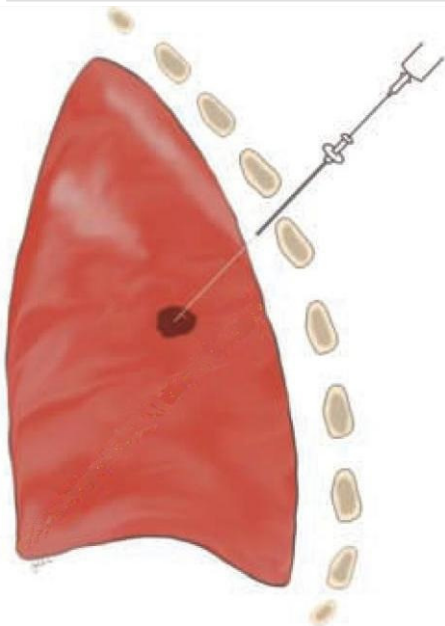
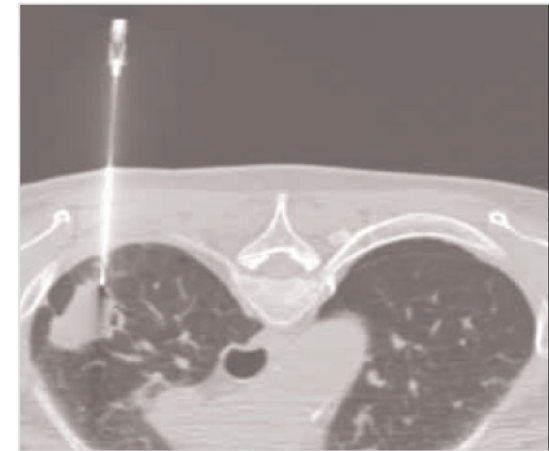
- Dr. Rajiv Gupta, Fall 2004

MGH Radiology

... because the current procedure is manual, iterative & time consuming.



Robopsy — Inadequate Current Biopsy Procedure



Insufficiently accurate

- Lesions < 10mm not targetable
- 23% failure to diagnose

Complications – Lung Collapse: 28% partial, 3% severe

Lengthy & Expensive – Average duration 2 hours

Robopsy — Inadequate Existing Solutions

Passive laser guidance systems *e.g. SimpliCT*

- Manual insertion
- No real-time feedback

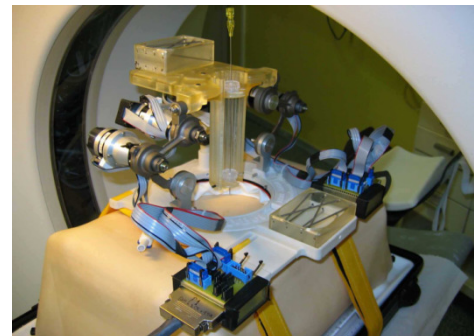


Gantry-mounted robots *e.g. Innomotion, PAKY-RCM*

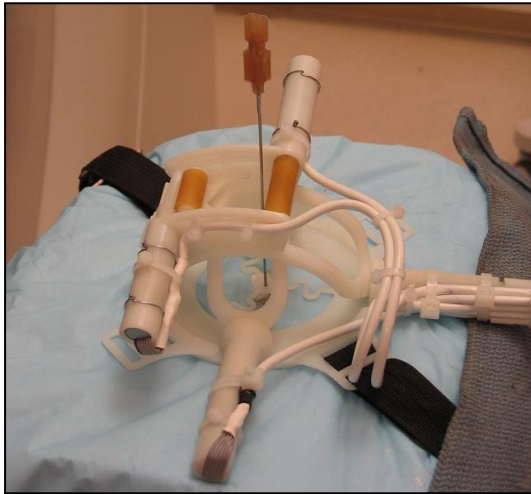
- Expensive \$\$\$
- No compensation for patient motion
- Large structural loop

Patient mounted robots *e.g. CT-Bot*

- Heavy (~2kg) and unnecessarily complex
- Minimal compensation for patient motion



Robopsy - System



Enables doctor to articulate and insert a biopsy needle while monitoring the CT-Scan in real-time.

- Patient-mounted disposable device
- Control unit on cart beside CT machine
- Remote operation from control room via interface

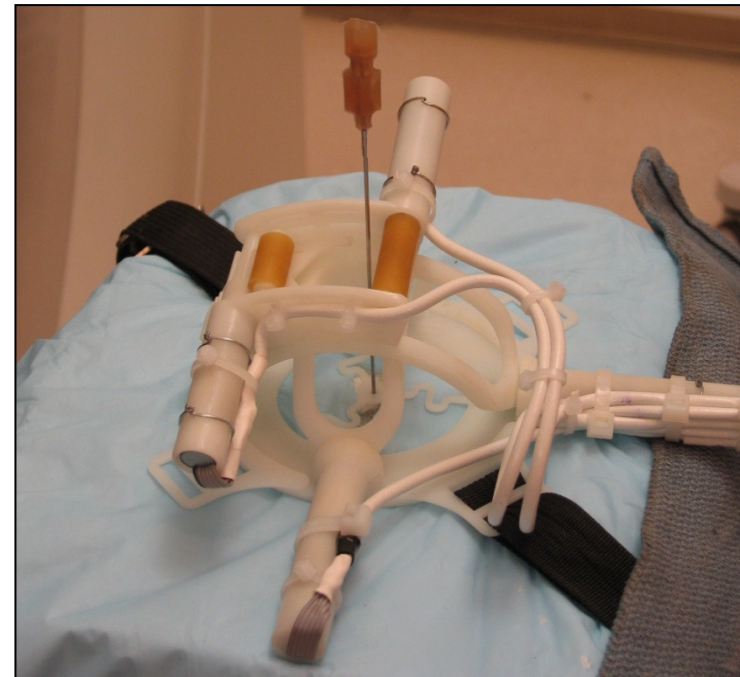
Robopsy - Benefits

Medical Benefits

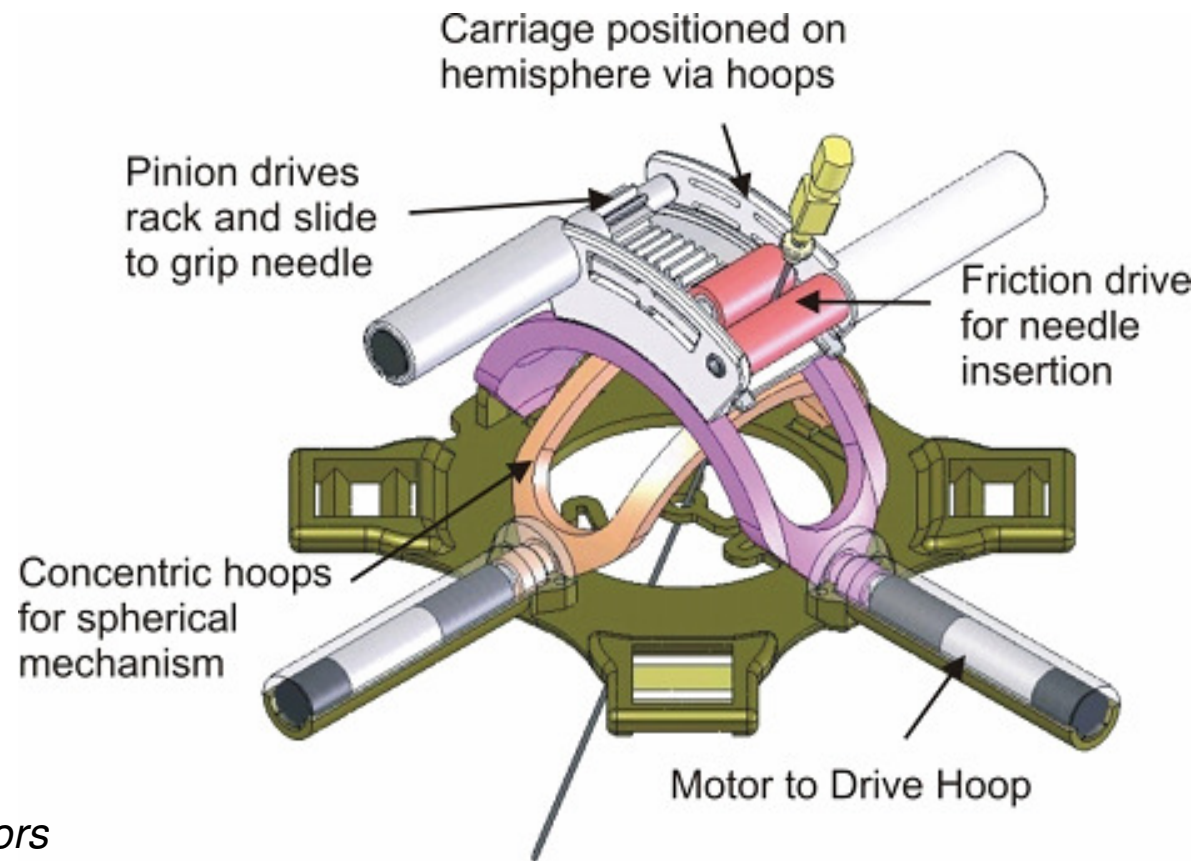
- Increased procedural success
- Smaller lesions targeted
- Reduced patient radiation exposure
- Reduced complications

Economic Benefits

- Reduced procedure time & increased CT throughput
- Increased procedural ease



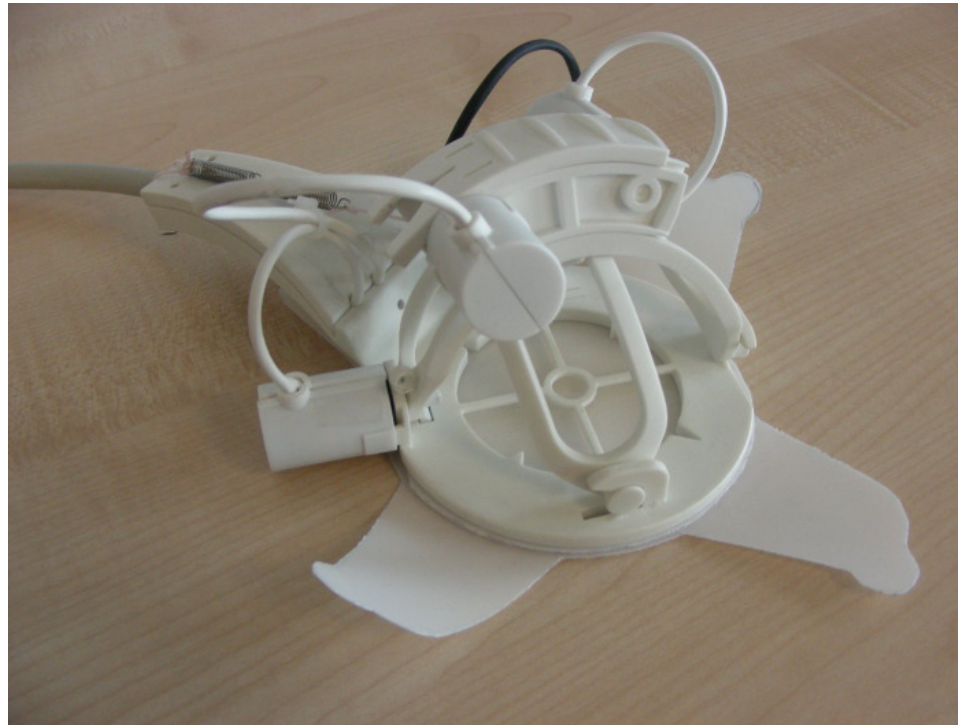
Design Stages – I: 07 / 2008



II / 2008

- *DC – Motors*
- *Open Carriage*
- *Metal-gear units*

Design Stages – II: 12 / 2008



IV / 2008

- *Stepper – Motors*
- *Closed Carriage*
- *Plastic Gear Units*
- *Plaster Patient Mounting*
- *Cable Management*

Design Stages – II: 12 / 2008



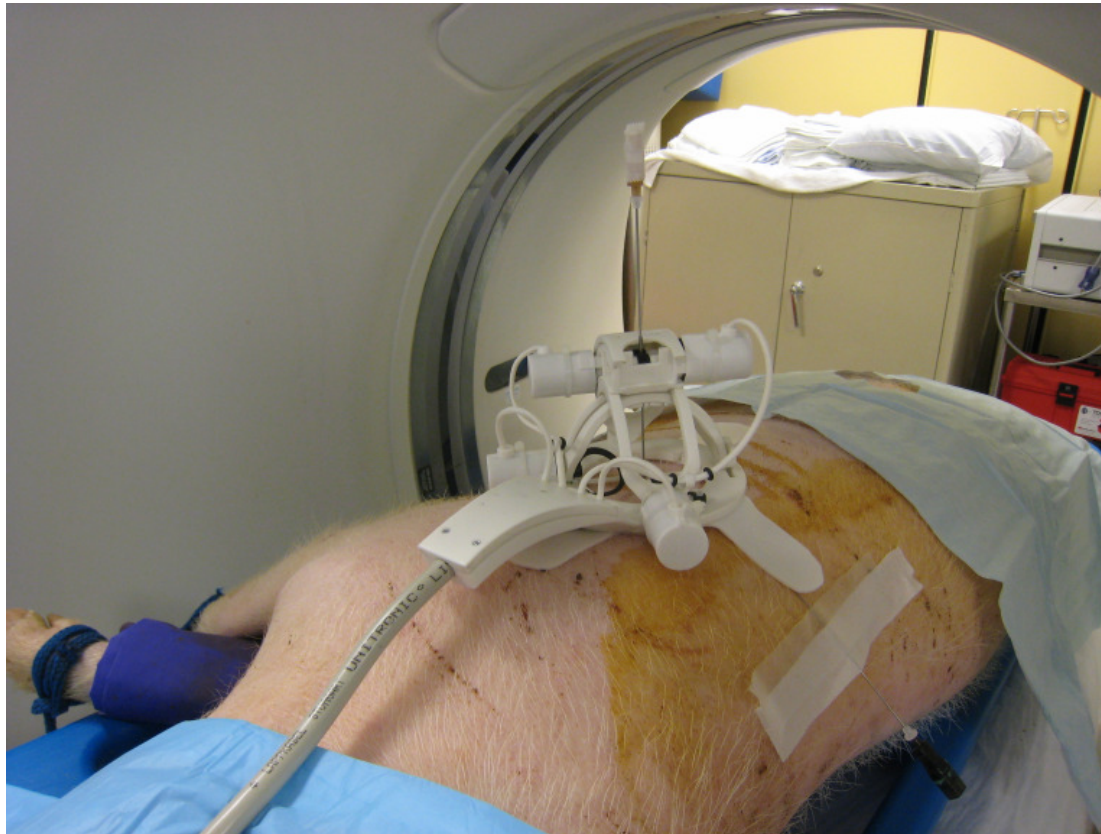
IV / 2008

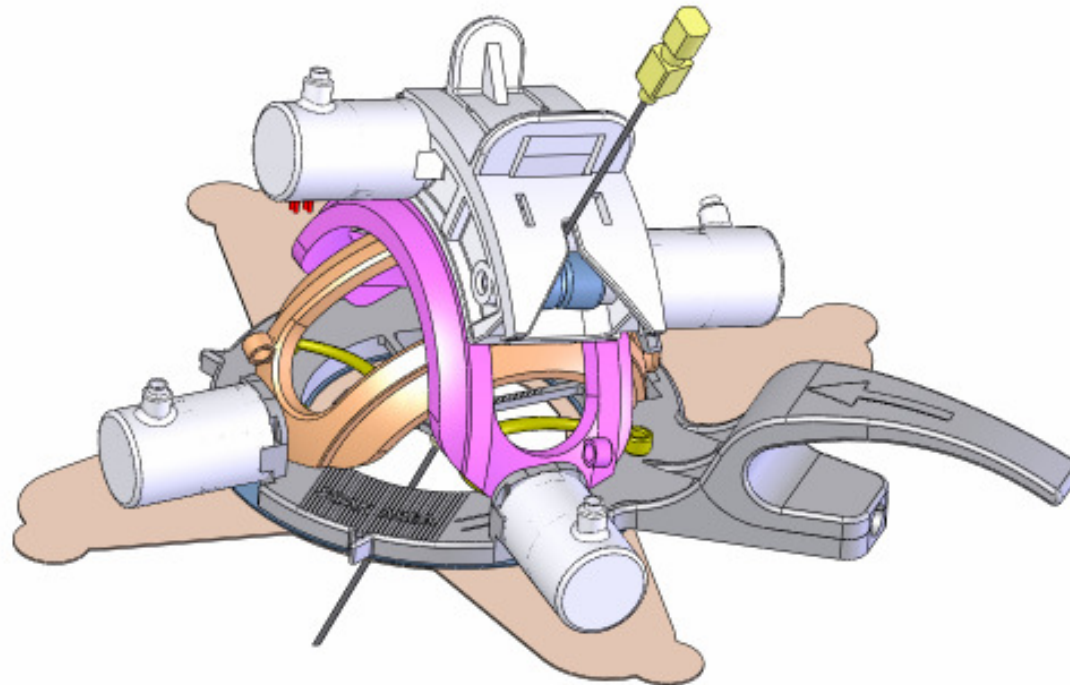
- successful porcine test

Design Stages – II: 12 / 2008

IV / 2008

- *successful porcine test*

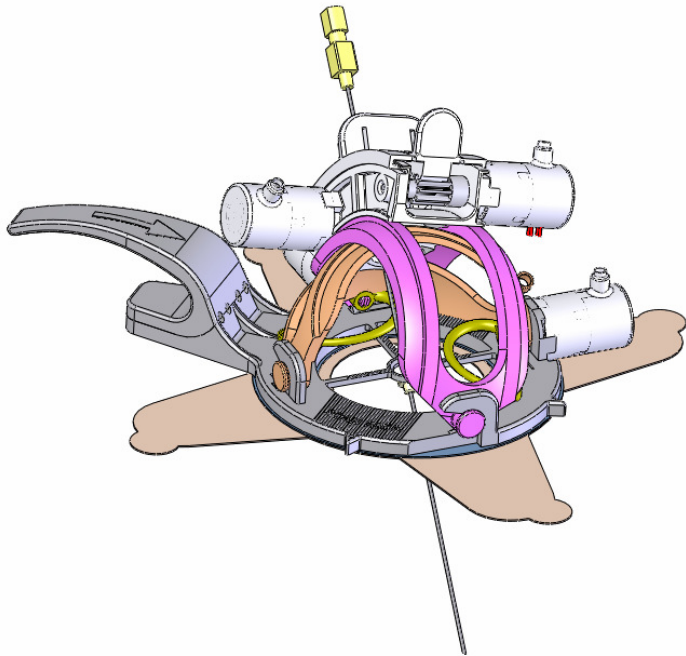




II / 2009

- *FEM – optimized Design*
- *Ergonomically optimized Design*
- *Backlash – free Gears*
- *Emergency Take - Off*

Robopsy - System



Simple, sterile, plastic structure

- low-cost snap together parts
- Lightweight – 200g
- CT Compliant

Patient mounted

- Respiratory and unexpected motion compensation

Selective needle gripping

- Compatible with organ motion

Universally adaptable

- Needle Independent
- CT Machine Independent

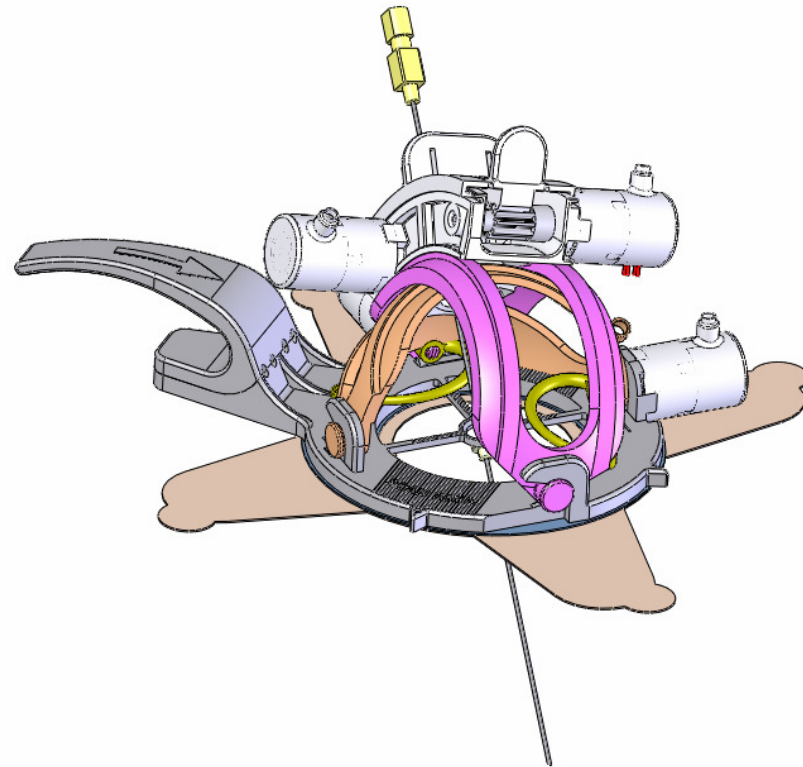
Robopsy — Future Use

Diagnosis

- Lung Biopsy
- Abdominal – Liver, Kidney, Pancreas
- MRI Compatible version

Treatment

- RF Ablation
- Targeted drug delivery
- Spinal insertions



Robopsy – potential production



Johnson Medtech

Dedicated to Medical Motion Subsystems

Medical quality ISO 13485:2003

Product design incl. DFM

Production in cleanroom or clean controlled environment

Injection molding, assembly & inspection in Class 8 cleanroom

Location: China, Shenzhen-Area