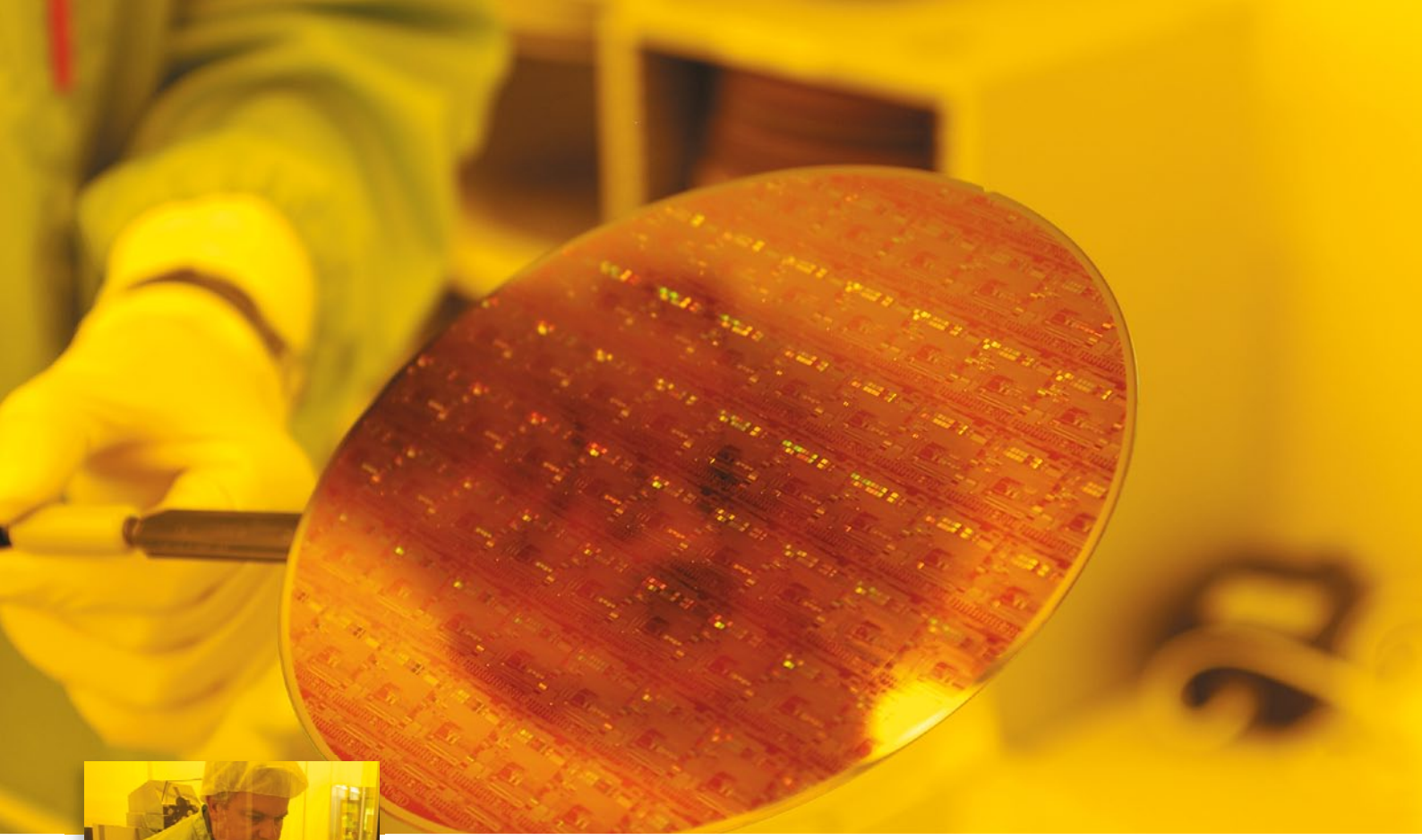
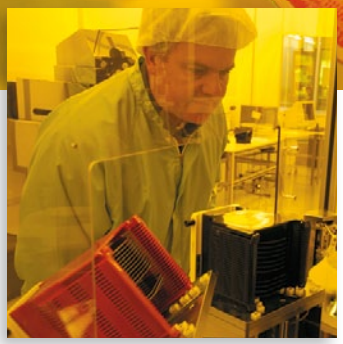




Thin Film Services

Accelerating your innovation in micro- and nano-devices

Philips Innovation Services is dedicated to helping you drive your micro- and nano-device innovation from idea to production. Working in close cooperation with you, and driven by your needs, we can realize a proof of concept, prototype a new development and even manufacture the finished device for you.

Engage our capabilities in devices such as MEMS, sensors, actuators, medical devices, microfluidics, membranes, optical fibers, probes and energy harvesters. And you know you are working with an organization whose range of process technologies is second to none: over 100 state-of-the art tools, housed in our thin film cleanrooms certified to ISO9001, ISO14001, and ISO13485 (medical device) standards.

We serve a wide range of customers, supporting their innovation in devices and system-in-package solutions for healthcare, lifestyle, solid-state lighting, solar and semiconductor applications.

One-stop-shop expertise in micro- and nano-devices

... manufacturing product

... product development

Proof of concept ...

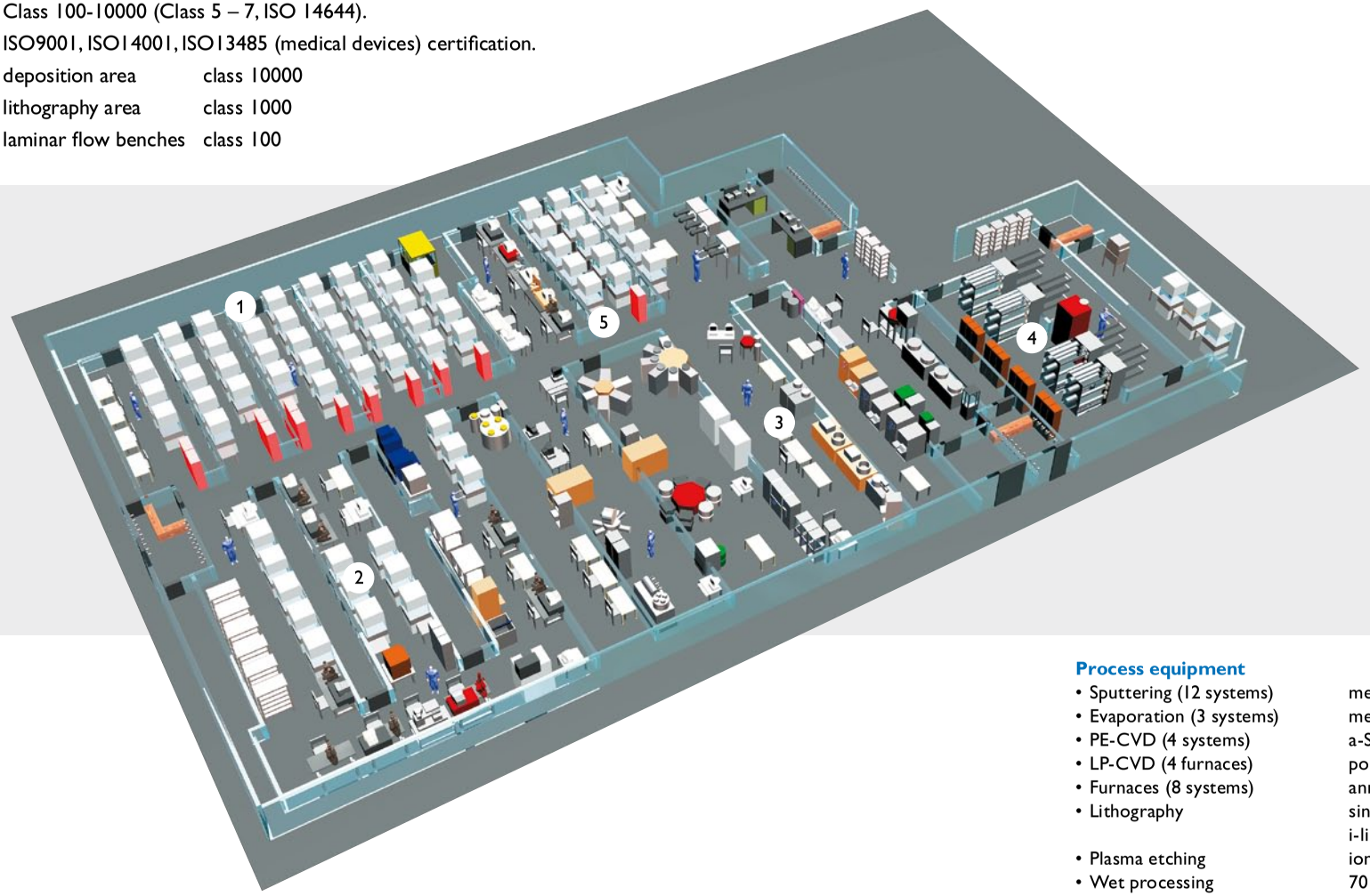
Micro- and nano-device capabilities are part of the extensive range of services from Philips Innovation Services. From product development to prototyping and production, quality and reliability, discover the possibilities yourself at www.innovationservices.philips.com

Philips Innovation Services

PHILIPS

Thin Film cleanroom facilities

- 2650 m² of cleanroom area
  Class 100-10000 (Class 5 – 7, ISO 14644).
  ISO9001, ISO14001, ISO13485 (medical devices) certification.
- deposition area class 10000
- lithography area class 1000
- laminar flow benches class 100



1. **Wet processing**
2. **Lithography**
3. **Deposition + plasma etching**
4. **Furnaces**
5. **Measuring/inspection**

E-beam lithography and ion implantation services are available through external partner

Process equipment

• Sputtering (12 systems)	metals, dielectrics, optical coatings
• Evaporation (3 systems)	metals, dielectrics, optical coatings
• PE-CVD (4 systems)	a-Si, SiN, SiO
• LP-CVD (4 furnaces)	poly-Si, SiN,TEOS
• Furnaces (8 systems)	annealing, diffusion, oxidation
• Lithography	single-wafer spinners (10), wafer tracks (2) contact aligners (4), i-line stepper, e-beam (external partner)
• Plasma etching	ion-beam etching, reactive ion etching, deep Si etching
• Wet processing	70 laminar flow benches
• Ion implantation	high-voltage implanter, high-current implanter (external partner)
• Measuring	profilometer, ellipsometer, stress, 4-point probe, etc.
• Inspection	microscopes, SEM (2 systems)
• Chemical Mechanical Polishing	
• CAD mask design	
• PCM testing	

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