



1 »Secur-O-bot« in operation

## Secur-O-bot

**AUTONOMOUS ROBOT FOR SURVEILLANCE, INSPECTION,  
MEASURING, DIAGNOSIS, AND TELEPRESENCE**

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#### Starting Point

In many respects, the capabilities of an autonomous surveillance robot far exceed those of humans. Such capabilities include:

- Detection of smoke and hazardous gases
- Detection of fire sources and smouldering fires at the earliest possible point in time
- Recognition of people in dark rooms using infrared and thermal-imaging cameras
- Perception of even the faintest noises by means of high-sensitivity microphones
- Use of 360-degree cameras
- Documentation of irregularities in sound and vision

Added benefits include:

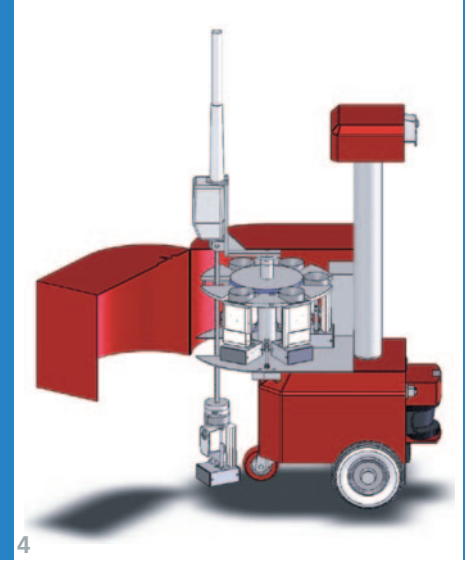
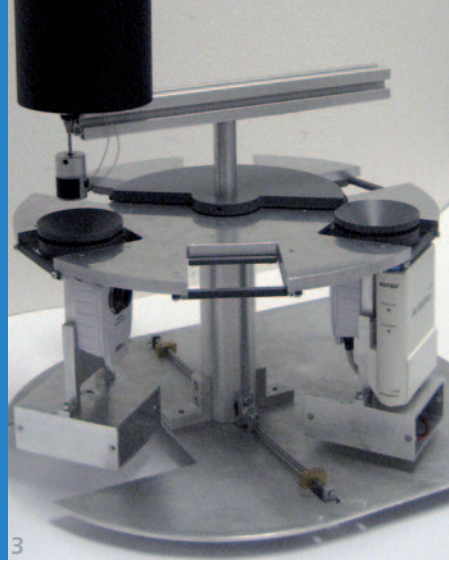
- No risk to security personnel in the case of acute threats
- Incorruptibility and utmost reliability

- No signs of fatigue
- No lack of attentiveness as a consequence of boredom or routine

#### Utmost Reliability

Secur-O-bot is an innovative autonomous surveillance robot that comes with rugged mechanical components, efficient navigation and flexibly configurable sensors.

The control software in Secur-O-bot is based on the tried-and-tested Fraunhofer IPA navigation system, which has already proved its worth in a wide range of different applications and environments, sometimes over several years of continuous operation. In contrast to those systems currently available on the market, the navigation of the basic platform is accomplished not by low-cost sensors, but by a highly



accurate laser scanner. This allows automatic, precise and virtually drift-free control of the movements of the small robot, which results in a high degree of operational safety and reliability of Secur-O-bot. The robot can reach velocities of up to 1 m/s with an operation time of up to 8 hours.

### Beneficial Functionality

The existing, extensive software library for mobile robots at Fraunhofer IPA permits the use of a wide range of different functional modules:

- Automatic robot patrols
- Independent threat detection
- Detection of humans
- Automatic alarm indication
- Camera-assisted remote control
- Remote access to individual sensor data
- Documentation of measured data
- Customized sensors
- Ease of use
- Simple input of routes – at fixed times or at random
- Simple setup and reprogramming

### Area Coverage

Traditional surveillance robots are only able to observe areas that are visible from the current robot position. In order to realize larger area coverage of process plants or buildings without the use of stationary sensors, Fraunhofer IPA has developed the new, innovative concept of sensor probes. By automatically deploying and collecting several small, self-contained sensor probes

with a mobile robot, the surveillance capabilities of this robot can be extended significantly without the high costs of stationary sensors installed throughout the area. Depending on the requirements and the current thread level, the deployment and position of the sensor probes can be varied.

### Ideal Price/Performance Ratio

The fact that the robot can be specifically equipped with just those sensors and functional modules that will actually be required for the particular application means that it is possible to achieve both the desired level of functionality and also the ideal price/performance ratio to suit your needs. Contact us to discuss your particular application.

### What we offer

Fraunhofer IPA will support you throughout all phases of your project – from application planning through the design and configuration of a suitable surveillance robot and its sensor components to realization and putting into service. More particularly, we offer you:

- Requirements analysis and advice
- Application-specific configuration of the robot with the required functional modules and sensors
- Customized user, software, and hardware interfaces
- Integration and networking in existing systems
- Installation and putting into service

- User familiarization and trial operation
- Service and maintenance

### Typical areas of application for Secur-O-bot

- Warehouses
- Company grounds
- Production plants
- Office buildings
- Shopping centres
- Pedestrian zones
- Department stores
- Museums
- Exhibitions
- Trade fairs

### Optional System Functions and Modules

- Safety bumper
- Outdoor equipment
- Automatic battery charging
- Voice output
- Ultrasound sensors
- Flashing-light and signalling devices
- Personal ID checks by means of fingerprint sensor
- Customized robot cover
- Multi-vehicle management system and fleet management

2 Secur-O-bot with magazine of sensor probes

3 Magazine of sensor probes in detail

4 Mechanism to deploy a sensor probe