

## Peri-D-Fence-L2 Perimeter Security

### Background

Increased requirements for perimeter security systems are a challenge to overcome. The company Peri-D-Fence (PDF) designed two patent-protected detection systems against **penetration** and **surmount** and implemented those into the design of the Peri-D-Fence-L1 (see Flysheet NS-FS-0190). The combination of both principles comes with a high detection security and low rates of undesirable alarm indications under all possible weather conditions during the year.

Due to further applications with deviant requirements for physical plant protection, the PDF-L2 design was developed.

Westinghouse Electric Company is a worldwide exclusive sales partner of Peri-D-Fence for this detection system, which can be installed at each facility, inside and outside nuclear, wherever a robust, simple to set-up and fully analog and therefore cost efficient intrusion detection is required.

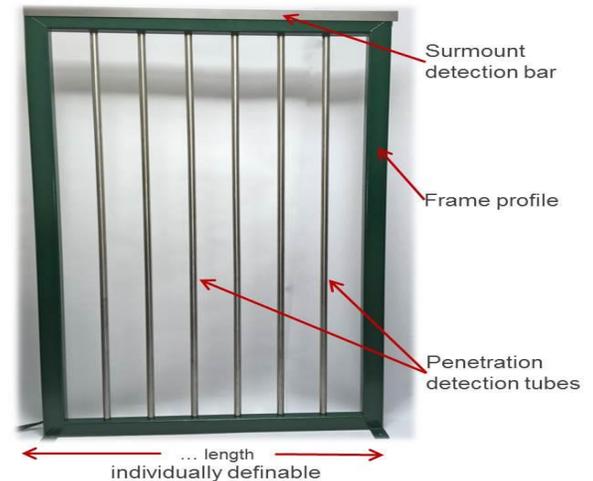
### Description

In a perimeter security system, which is designed as a fence, both detection systems (penetration and surmount) are combined.

In principle, the application of the hollow detection bodies is possible on walls, ceilings, floors, fences and in front of openings.

The PDF-L2 is based on a modular design with a wide range of different large detection segments even usable as a gate or door and can be fully integrated into the PDF-L1 fence design.

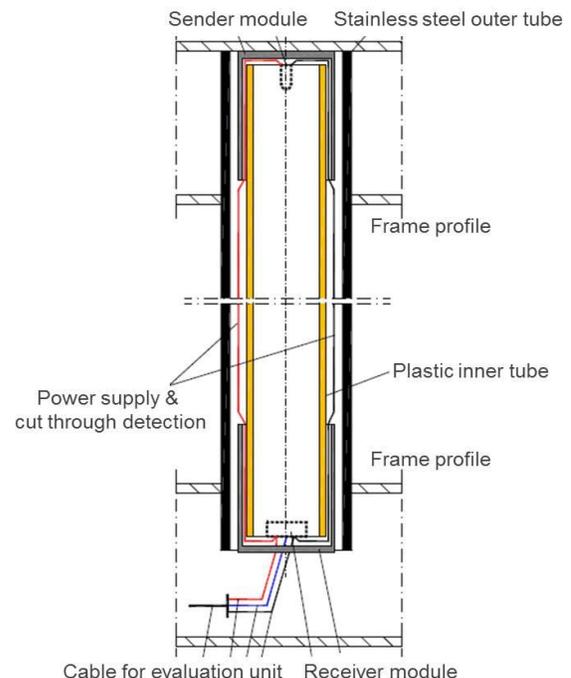
The PDF-L2 penetration detection tubes are arranged vertically, which makes it difficult to pass quickly. If requested, the detection tubes can be arranged in a horizontal position as well.



PDF-L2 fence section

### Penetration Detection

The functionality of the PDF-L2 detection tubes is based on the same (photoelectric) detection principle as used for the PDF-L1. The hollow detection bodies are monitored by an electromagnetic wave (LED light) against bending or rupture.



## Surmount Detection

Surmount is detected by a continuous weighing bar on the top of each fence section, which will detect any attempt of over climbing by integrated load cells in 3-axis.

Additional constructions as Y-arm with barbed wire can easily be adapted to increase the surmount time.

## Benefits

The advantages of the system compared to previous perimeter protection systems are:

- Fully analog, no IT components required
- Detection and localization of all forms of penetration and surmount
- Detection of manipulation or attempt of deception on the sensors
- No functional limitations due to weather conditions and visibility
- No false alarms due to small animals
- No limitations due to form, temperature, color or speed of the attacking objects
- No impairment of the detection properties due to subsidence of the subsurface
- Also used as a door, gate and safety gate in front of openings and passageways as well as wall surface protection
- Fast assembly due to high degree of prefabrication

## Deliverables

The system consists of a combination of two detection systems against penetration and surmount. The length/height of the fence system can be chosen as required in combination with the individual definition of the length of each detection section.

The system fulfills the following requirements for system components, periodic inspections and maintenance and interfaces:

## System Components

- Design of all components according to environmental conditions
- Use of components with a long lifetime and operational reliability
- Concealed installation of the electrical components (up to IP68)
- No recognizable cable routing, labeling or marking

## Periodic Inspections and Maintenance:

- Inspection adapter could be connected to the fence element to analyze the detection components
- Use of identical and similar standard components

## Interfaces (connection to alarm system):

- Fully analog, no IT components required
- Reaction-free interface
- Connection of two alarm messages per detection section ("penetration" - "surmount")

## Experience

The Westinghouse Plant Security group, with more than 30 years of experience, provides periodic verification of plant security by utilizing combined safety and security competencies as a one-stop shop to decrease customer efforts and costs.



*The benefits as listed are the result of the regulatory qualification process in combination with an extensive testing on a 1:1 scale test-installation for a one year period for the PDF-L1.*