

# secty lifePatron®

Advanced earthquake warning and security system

sectyelectronics®

## Project – Switzerland - Basel IWB-Industriewerke Basel



### The IWB increases the earthquake safety of the natural gas grid.

In case of strong earthquakes in future natural gas supply into the gas distribution system will automatically shut off. With it secondary damage are reduced by uncontrolled escaped natural gas.

The advanced earthquake early warning system „secty lifePatron®“ to shut off natural gas supply into IWB gas distribution system from the transfer stations of GVM has been starting running successfully. The corresponding safety shut-off valves of the transfer stations are shut off in case of stronger earthquakes with a local intensity between VI and VII. The above mentioned intensity values at which the shut off occur, now apply for each station. Subject to future empirical values these intensity values can be changed by authorized employees of the IWB at any time.

To make sure that the natural gas supply is really interrupted only in case of a strong earthquake, always three independently in the network working earthquake detectors per transfer station decide on the earthquake alert. So, when two of three detectors raise the alarm the natural gas supply of the corresponding station is shut off.

#### **Project description:**

Five transfer stations induct natural gas out of the transport network into the gas distribution system of the IWB. In each of these stations high sensitive sensors (1 master and 2 submaster) care for more safety. In case of a strong earthquake the natural gas supply from the transport network into the gas distribution system is shut off automatically. If then heavy damages to the gas pipes occur no more natural gas flows out into the gas distribution system what reduces secondary damages, e.g., by fires.

Each transfer station works autarkic. In case of a strong earthquake the transfer station shut off and in addition sends a signal to the control center. If two transfer stations are shut off at the same time and both signals are sent to the control center the complete gas net is shut off.

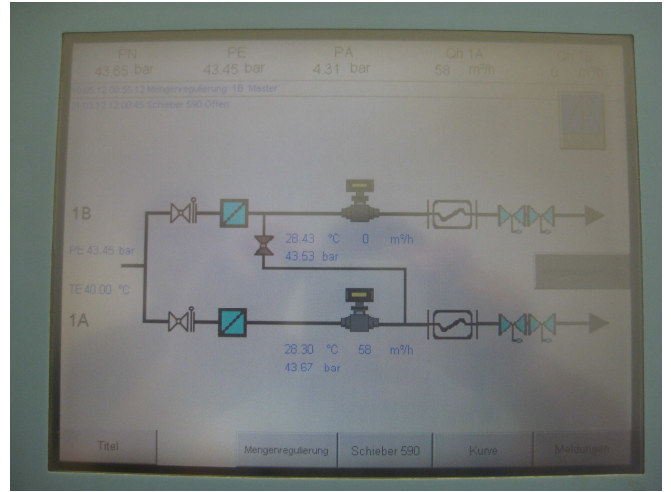
**Explosion proof room:**



**Control room/ Monitoring:**



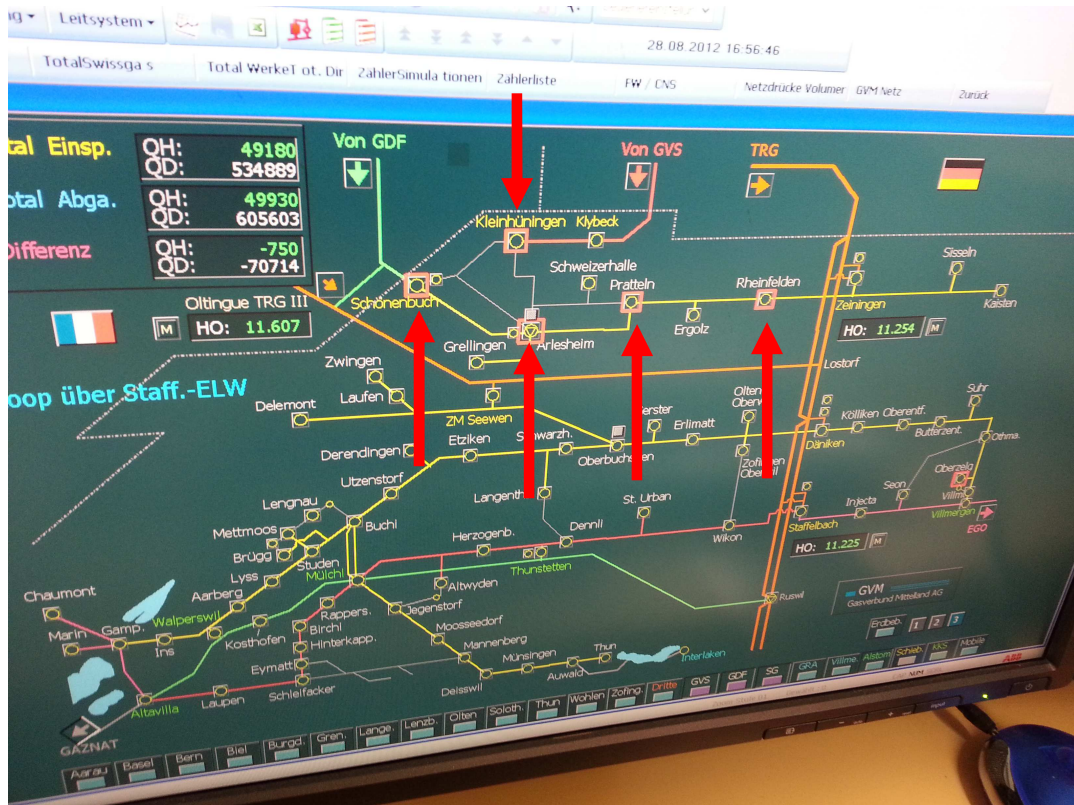
Control room



**Erdbenschutz IMB Anlagen**

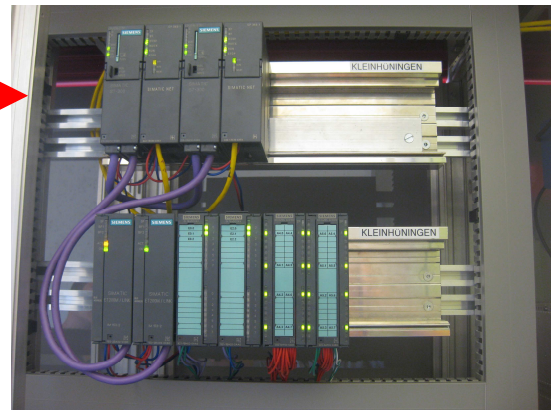
	SW ZU	Erdbenschutz angeflut	Stellung SFS Konstantdruck	Stellung SFS Sinus	Stellung Sensor Erdbenschutz	SW Formaufbereitung	Gesamt SW Formaufbereitung
Arlshelm	☒	☑	☑	☑	☑	☑	☑
Kleinhüningen	☒	☑	☑	☑	☑	☑	☑
Pratteln	☒	☑	☑	☑	☑	☑	☑
Rheinfelden	☒	☑	☑	☑	☑	☑	☑
Schönenbuch	☒	☑	☑	☑	☑	☑	☑

Earthquake warning program for 5 transfer stations

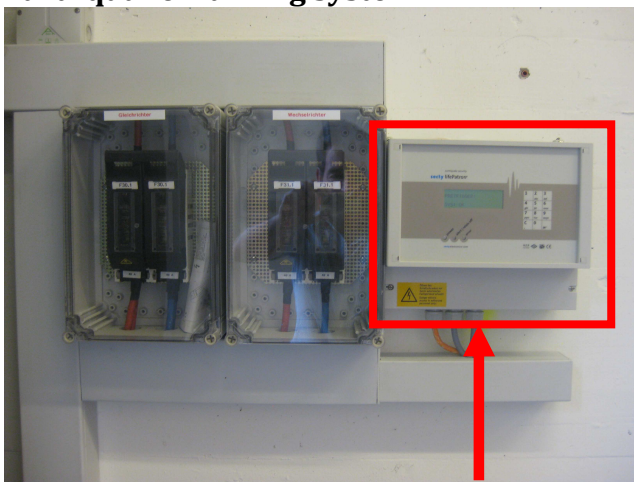


The 5 transfer stations

**SIEMENS SPS-Steuerung:**



**Earthquake warning system:**



Master



Submaster



### SMS-Alarm:

While closing the whole gas net in the case of an earthquake alarm the transmission of an SMS alarm follows immediately to the respective mobile phone of responsible people.

### Maintenance:

Now advanced earthquake early warning system is examined by the GVM and is serviced once a year as well as tested. Alarm will transfer directly to the control room of the GVM.

### External Influence:



A railway line runs in approx. 40 m from the earthquake detectors. The analysis from the railway line or the trains generated vibrations/ oscillations has shown that these oscillations can release no alarm.

### Other measures to the earthquake safety:

Although earth-moved gas pipes are endangered with an earthquake only slightly, the IWB has substituted all older, break-threatened natural gas pipes for those of more elastic material since 2001. As another safety measure additional gate valves were installed in the whole gas distribution system. With it damaged parts of the gas net can be separated from the remaining gas net, so that the effects of pipe damages remain restricted.

## Station 1 of 5

