Open up your dreams

Earthquake early warning system for factory plant such as semiconductors by "Real-time earthquake information" and "P wave seismograph"

Earthquake early warning system

Earthquake early warning system instantaneously estimates S wave arrival-time to the place and the seismic intensity from information obtained by the real-time earthquake information and data of locale P wave seismograph.

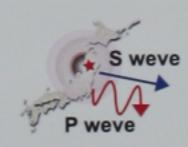
Combination of the information enables the energy shut down, control of equipments etc. and aural warning of disaster prevention system, before a big earthquake reaches the place. Though it depends on the distance from the epicenter, there is a time of several seconds from receiving the real-time earthquake information and observing locale P wave until S wave attainment. Within this interval, safety can be secured effectively and a lot of secondary disasters can be prevented.

In addition, the announcement of the real-time earthquake information might become after a big shake reaches in the vicinity of the hypocenter of the earthquake directly above its epicenter generated in the inland. Even in this case, locale P wave seismograph can obtain the primary wave before a big shake reaches. An attainment seismic intensity estimation of a locale P wave seismograph and a decision by majority judgment of the plural installation of the systems ensure detection of earthquake occurrence and operates immediately Earthquake early warning system, before the shake.

Iwate and Miyagi inland seismic ground motion work situation of Earthquake early warning system [JBS-01]

The device damage situation [Before installing Earthquake early warning system]

- Installed location : Miyagi Oki Electric Industry Co. Ltd.
 - at 1 Okinotaira, Ohhira-murqa, Kurokawa-gun, Miyagi Prefecture
- Date & Time : Saturday, June 14, 2008 at about 08:43
- Epicenter: Southern part of Iwate prefecture
 Earthquake size: Depth 10km and magnitude 7.2





System operation

Time of	Delay time	Events	Acctual Intensity of S wave	Emergency earthquake information of Japan Meteorological Agency		JBS-01 (Phase3) installed in Miyagi OKI Semiconductor Acctual Intensity Estimated Value of S wave of P wave (##) Output			Remarks
occurrence	[sec]		[gai]	Emergency Information (No)	Estimated Value (9al)	017 1101011			According to the final info of Japan Meteorological Agency
8:43:45	20 E	arthquake Occurrer	nce						
8:43:54	11	Arrival of Emergency Information		First Information	24.557				ND20080614084350
8:43:55				Second Information	24.429				
8:43:58				Third Information	35.185				
8:43:00	5	Arrival of P wave				47.778			P wave detection→ Start calculation
8:43:01	4	Broadcasting start output				47.778	148.748	Start of Broadcast [>80gal]	Broadcast→ Evacuation
8:43:02		The state of the s		Fourth Information	39.495				
8:43:02		Control signal output for system shut down				60.677	176.914	System control system shut down [>120gal & 3sec]	Scanner stop Prober stop Stop of automatic transport Shut down of gas & chemical
8:43:02									
8:43:04				Fifth Information	62.27	93.706	283.501		
8:43:05				Sixth Information	62.27	93.706	285.002		Acctual value
8:43:05	0	Arrival of S wave	251					S. S	(Locale seismograph)

Operation situation of Earthquake early warning system due to Iwate in 2008 and Miyagi inland earthquake

Earthquake Occurrence



Erasped time
0 5 10 15 20 25 30 35 40 [sec]

S weve arrival
P weve arrival
Emergenc annousement report
Monitering Point (p weve)

OKI Engineering