

Fast-ETHERNET in the Wind Power Plant.

Project

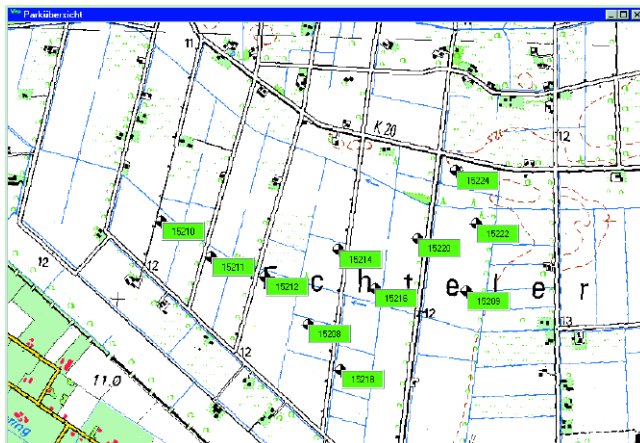
Data and voice transmission via the same network

ETHERNET, long established in the IT sector, can also prove advantageous in industrial usage, for example, in the networking of wind power generators. The demands placed on the Ethernet in this case are similar to those in many branches of automation and manufacturing. Hierarchical levels make new, object-oriented structures possible. The data throughput rises, installation and maintenance are easier to perform.



Wind power generators with Fast ETHERNET network

Network diagram



Plant number	Date / Time	Status	P _{ACT} [kW]	NGENH [RPM]	VWIND [m/s]	Network	IP address	Setc	UsedLine	Plant type	ES
1	040001001	06.12.01 13:47:19	OK	-2	108	7.3	0	192.168.0.1	59999	1522	
2	040001002	06.12.01 13:51:45	Drift	417	1101	7.8	0	192.168.0.2	59999	1522	
3	040001003	06.12.01 07:47:11	Drift	256	544	6.9	0	192.168.0.3	59999	1522	
4	040001004	06.12.01 13:50:32	Drift	293	577	6.6	0	192.168.0.4	59999	1522	
5	040001005	06.12.01 13:49:17	Drift	295	559	6.6	0	192.168.0.5	30000	1522	
6	040001006	06.12.01 13:47:25	Drift	321	600	7.1	0	192.168.0.6	59999	1522	
7	040001007	06.12.01 13:47:14	Drift	310	591	6.2	0	192.168.0.7	59999	1522	
8	040001008	06.12.01 13:47:32	Drift	259	523	6.7	0	192.168.0.8	59999	1522	
9	040001009	06.12.01 13:53:23	Drift	237	509	6.7	0	192.168.0.9	59999	1522	
10	040001010	06.12.01 13:48:32	Drift	231	688	5.8	0	192.168.0.10	59999	1522	
11	040001011	06.12.01 13:50:42	Drift	413	1094	6.3	0	192.168.0.11	59999	1522	
12	040001012	06.12.01 13:48:35	Drift	286	575	7.4	0	192.168.0.12	59999	1522	
13	040001013	06.12.01 13:50:15	Drift	320	660	4.8	0	192.168.0.13	59999	1522	
14	040001014	06.12.01 13:47:04	Drift	247	511	6.2	0	192.168.0.14	59999	1522	
15	040001015	06.12.01 08:51:04	Drift	180	664	5.6	0	192.168.0.15	59999	1522	
16	040001016	06.12.01 13:52:43	Drift	211	534	4.7	0	192.168.0.16	59999	1522	
17	040001018	06.12.01 13:49:47	OK	-3	29	6.3	0	192.168.0.18	59999	1522	
18	040001019	06.12.01 13:51:00	Drift	421	1081	7.1	0	192.168.0.19	59999	1522	
19	040001020	06.12.01 13:49:10	OK	-3	12	4.5	0	192.168.0.20	59999	1522	

Key products



Industrial ETHERNET Rail Switch RS2-FX/FX and RS2-FX-SM/FX-SM



Industrial ETHERNET Rail Switch RS1-FX/FX



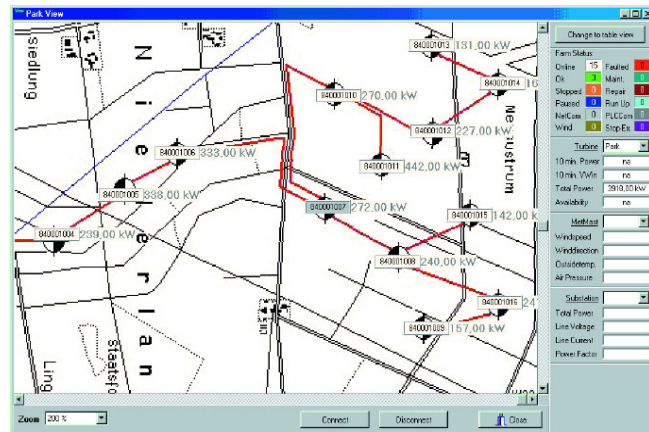
Modular Gigabit ETHERNET Switch MACH 3005



Modular Gigabit ETHERNET Switch MACH 3002

Project details:

The wind power generators are equipped with their own PCs and PLC systems and are linked to each other with Hirschmann ETHERNET rail components. Dial-in nodes enable information about the individual systems or for the entire power plant to be visualized and controlled. This enables completely seamless monitoring and optimized control.



Bird's eye view of the wind power plant. Picture: Enron

Project parameters

- Height of the wind power generators: 100 m
- Number of wind power generators: up to 100
- Max. capacity of the wind power plant: 150 MW
- Planung und Realisierung: Enron Wind GmbH
- Planning of the Fast-ETHERNET Backbones

Requirements

- Seamless monitoring and optimized control of the wind power generators using SNMP management.
- High transmission rates for both data and voice transmissions
- Reliable data transfer
- Fail-safe network
- Uninterrupted operation even when expanding the network and replacing components.
- Conventional wind power plant solutions with a maximum of 2.5 Mbits via the Arcnet are too slow. The ETHERNET solution is 40 times faster.

Solution

- Cost-effective ring structure
- Switching to redundant links within less than 500 ms without loss of data
- Switched Fast-ETHERNET Backbone (100 Mbit/s) and redundant linking using F/O cables
- Connecting the wind power generators, measuring systems, IP telephones, central control room and service station to a shared F/O network
- High network availability

Why Hirschmann?

- Wide range of ETHERNET products suitable for industrial use, including switches, hubs and transceivers.
 - The devices can withstand extreme environments, such as electromagnetic fields, high temperatures and aggressive conditions and do not require a fan
 - Considerably reduced wiring requirements
 - Devices have a long operational life
- The infrastructure components make it possible to make a precise selection for the application, both in multimode or singlemode models.

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