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The petrochemical industry has a significant role to play in our everyday needs. It provides the raw materials for products such as plastics, paints, medicines, man-made fibres (for clothing and other applications) and toiletries and is the link between the petroleum and chemical industries. Every year, Cologne based petrochemicals company INEOS manufactures 4 million tons of chemical raw materials for subsequent processing in the chemical industry.

Electrical safety solutions in the petrochemical industry

>> The company's headquarters in Cologne, Germany, occupies a site covering 176 hectares and employs a workforce of approximately 2000. Refineries supply plants known as "crackers" with raw material – petroleum ether or naphtha – which is then used to produce new substances for the chemical industry. Crackers, which are based on similar principles to refineries, are primarily used to break down long chains of hydrocarbons into smaller ones and then isolate them.

It is not only the technical structure of a cracker that is extremely complex, but also the power supply system. As a basic principle, the numerous different individual units, control motors, measuring equipment, N/O contacts, pumps, heaters, cooling





Complete control in complex systems

Insulation monitor IRDH575, fault location system EDS470 and measuring current transformers with a variety of dimensions are used as EDS systems (an average of 50 - 80 CT's per system). Assigning transformers enables INEOS to not only to detect and signal insulation faults, when they occur, but also locate them and pin-point the load. If several loads happen to be connected to a faulty outgoing circuit, the portable EDS3060 system is used to detect the precise location by means of measurement using portable current clamps.

units, and so on, are supplied with voltages of DC 24 V , AC 230 V and AC 500 V. Processing highly explosive materials necessarily involves particularly high requirements in terms of safety at the plant.

When it comes to gaining trust, actions speak louder than words

During the commissioning of an ethane cracker in 2002, an earth fault occurred. After BENDER was asked to locate the cause and once it had been discovered by using the EDS3065 portable insulation fault location system, a decision was made to monitor the entire plant for insulation faults on a permanent basis.

Since then, EDS insulation fault location systems have been used in ethane crackers to continuously monitor not only the electrical systems, but also the drives, lighting, sockets, control voltages, measuring voltages and measuring transducers. Earth fault messages are sent to monitors in a supervisor room or to a master control station, where they are then visualized.

The large number of smaller systems is also monitored using BENDER technology. Loads are operated by means of converters on many of these systems. Long cables also increase the system's capacitance to PE. Here, the IRDH275/IRDH375 systems are sufficient for monitoring purposes, as they are equipped with state-of-the-art measuring technology, such as the *AMP^{PLUS}* technique.

By using permanent insulation monitoring, the costs of maintaining a cracker plant have been considerably reduced, the availability and safety of both the plant and personnel increased significantly and the conditions for compliance with the accident prevention regulations and guidelines applicable in the location of use have been met – all of which are typical advantages of BENDER safety solutions. ■

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