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Data Collection and Processing with a Waste Monitoring System

Monitoring of Hazardous Waste

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Transport vehicles carrying wastes hazardous to human health or the environment are required in Germany to maintain permits and be monitored. Using the waste monitoring system ASYS, the data required by the waste disposal process can be collected and processed reliably. ASYS was developed by ITU, a subsidiary of MaK DATA SYSTEM, together with Condat AG in Berlin. It is now used in more than 1000 workplaces.

The legal background

Each year, between 1½ and 2 million German domestic transports of waste hazardous to health or the environment take place which are legally subject to an official permit and monitoring authority. The basis of this monitoring regime, besides European law, is the Closed Substance Cycle and Waste Management Act (KrW-/AbfG). Its underlying regulatory framework (UGR) consists of seven ordinances. These regulatory ordinances, together with administrative guidelines, define who must obtain permits from the relevant authorities for the disposal for the waste producer, transporter, and disposal service, and who must document the transport and final disposal of the waste.

To perform their permit and monitoring duties, due to the high number of transports, the governmental authorities need a software package which can be flexibly configured to the various conditions relevant to each office. Although the KrW-/AbfG is a federal law, the execution of that law is the responsibility of the 16 German states themselves. That means there are 16 different ways to distribute the responsibilities between various offices. Moreover, in some states there are companies who are entrusted with official tasks at different levels. Responsibilities are also occasionally delegated.

The origin of ASYS

A software package which can collect and process the legal waste data of 16 federal states must be able to handle these various and changing conditions. In order to drive the implementation of a waste monitoring system in a unified way, the individual federal states founded a shared business office in 1998: the Information Coordination Office ASYS, or IKA for short. The IKA was also the contracting authority for the ASYS project. ITU, in collaboration with Condat AG in Berlin, won the project.

The IKA continues to drive the project, along with maintenance, upgrades, and further development. The construction of this Germany-wide one-time collaboration of states led to excellent results: Two states which originally refused to join later did so. Now all the German states are participating. While the focus of the project was on ASYS at the outset, it has in the meantime been extended to all IT systems in the area of waste management. In the process of this development, MaK DATA SYSTEM, along with ITU, has already taken on two contracts for Web portals for the Ordinance on End-of-Life Vehicles (Altfahrzeugverordnung) and for voluntary redemption.

Since 2000, ASYS has been put into operation step by step in all federal states, and is current in regular use in more than 1000 workplaces. ASYS covers all the significant processes named in the waste management law and largely defined by form templates. These particularly include

- Record of Proper Waste Management (Entsorgungsnachweis) for waste requiring special supervision, both in the basic procedure and in privileged procedures,
- Collective Record of Proper Waste Management (Sammelentsorgungsnachweis) for waste requiring special supervision,
- simplified records and collective records for waste requiring supervision,
- release of waste disposal services from the need to obtain official verification per §13 of the Ordinance on Waste Recovery and Disposal Records (NachwV).
- Handover Certificate and Consignment Note for transport and dump control and

- waste management concepts and waste balance sheets.

These tasks are rounded out with a broad range of master data. It administers the different participants in waste display in their different roles: producer, transporter, and disposal service.

The KrW-/AbfG and its regulatory framework in their current version are largely still focused on paper based methods. The following section outlines how wastes requiring special supervision are approved based on paper forms and monitored using the ASYS software. There are variants and exceptions to the described basic

processes which will not be examined here in greater detail.

Precheck

If a producer, transporter, or disposer first makes contact with the relevant authorities for to the disposal of wastes requiring special supervision, the office assigns a unique official number (producer, transporter, or disposer identification number). The office enters this new participant into ASYS along with their approval status, that is, content, legal basis, and any time limits on the approval.

- For transporters, the transport permit with any existing limitations on type of waste and

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A number of forms must be completed during the disposal of wastes requiring special supervision. These are now entered digitally with ASYS. Misuse during waste disposal is greatly limited thanks to the possibilities for quickly testing the data.

state of validity is entered.

- For a disposer, all facilities and their disposal processes as well as the waste types allowed are entered.
- Producers are recorded with their waste types and production locations.

Producers and disposers of waste requiring special supervision must complete a record of proper waste management together and present it to the local authority for the disposer for verification. The producer must describe the waste by origin, composition, and amount in the Declaration of Responsibility (Verantwortliche Klärung) and the Declaration Analysis (Deklarationsanalyse) of the responsible party. The disposer adds the Declaration of Acceptance (Annahmeerklärung) in which they confirm that the waste was accepted and will be disposed of safely. The disposal authorities enter this information into ASYS using the previously entered master data. Here there is an initial comparison between the master data already known and the data of the record of proper waste management. If there are no reasons on the part of the government to deny the disposal of the waste by this disposer, the office grants official approval within 30 calendar days. The approval granted is valid for a maximum of five years.

Transport and storage check

At this point, the waste may be transported from the producer to the disposal service. Each individual transport must be documented by a set of Consignment Notes – each set consisting of six duplicates. There are up to 2 million of these per year in Germany. Two of the copies of the Consignment Note are for the competent authority, while the others must be added to the waste transporter's record book. Each individual Consignment Note must be checked for as perfect a match as possible against the existing approval information. This includes a check against the data in the record of proper waste management, the approval

data of the disposal service, and the transport approval of the transporter. If multiple transporters execute a transport in stages, then a check must be performed against the data of each one.

The entry and check of Consignment Notes is a mass business. They are performed in ASYS making as much use as possible of the already known master and proof data. Based on the large number of participants and transports, as automatic a check as possible is necessary. For precisely this purpose, ASYS has a flexibly configurable and extensible checking mechanism which is based on a system of check scripts. A shared pool of tests (about 250 scripts) is extended with state-specific extensions with which ASYS can be adapted to the different requirements of the states at any time.

Additional functions

Besides the testing of records and Consignment Notes, ASYS can also serve as an informational and statistical tool. In all, ASYS has three different search and query tools of different complexity. Predefined queries for repetitive questions can be stored in the system configuration and called up by the user. The data entered into ASYS can also be used to fill out regularly needed texts with content.

Many waste transports and approvals affect not only a single office in one state, but rather have effects on multiple states. Since ASYS is not a central database – at least one ASYS database is maintained for each federal state – there is therefore a need for data exchanges between states. For this reason, ASYS is equipped with an integrated communication module which includes a configurable mechanism for the generation and receipt of messages to or from other federal states.

For data exchange with non-ASYS systems, the system is equipped with the EDIFACT-based BUDAN interface of 1998, which is based on the work of the Working Group of Federal States on Waste"Federal Unified In-

terface for Waste Record Procedure". Important parts of the second version of the BUDAN interface are implemented as an XML interface.

The advantages of ASYS

- Up-to-dateness of data due to digital maintenance
- Fast, simple data checking options, since the process data can be compared to the master data.
- Exchangeability of data between the different involved authorities – even between multiple states involved in the disposal process
- Adaptability of ASYS to the specific requirements of states (e.g. for supplementary testing or other query requirements from the database) by trained professionals of the states themselves is possible – no programming by the manufacturer is necessary

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