Waste Recycling
Korn Recycling GmbH

Stationary Fire Protection
Case Study
Two successful enterprises.

Korn and Rosenbauer – leaders in their areas.

Korn – specialist in the recycling industry.

The Korn Recycling GmbH from Albstadt-Ebingen, Germany, was founded in 1984. Their core business: waste management for industry, business, and trade as well as private households. Their vehicle fleet consists of 15 vehicles. If necessary, all sorts of containers can be moved.

Companies in Germany and abroad appreciate the high quality standards when it comes to sorting and treating the waste. Hence, the modern recycling specialist Korn has been supplying international customers in the paper, plastics, wood, as well as scrap and metal processing industries for years.

Since 2002 Korn has been producing high-quality refuse derived fuel for the cement and power plant industries.
Rosenbauer – powerful extinguishing systems and custom-made solutions that protect property and save lives.

Rosenbauer means fire protection – and has for over 140 years. Today Rosenbauer of Austria is one of the world’s largest manufacturers of municipal fire trucks, aerial rescue equipment, specialized airport and industrial vehicles, and both stationary and semi-stationary extinguishing systems. Professional and volunteer fire brigades, industrial and airport fire brigades, along with planning and engineering offices across the globe put their trust in Rosenbauer’s cutting-edge technologies, systems and solutions. Rosenbauer invests heavily in research and development for preventive fire protection, and dedicates its vast knowledge and lessons learned from over a century of active firefighting experience to keeping people and property safe. Rosenbauer itself develops and manufactures the key components used in the technologies of firefighting and extinguishing-agent delivery, thus guaranteeing best-of-class quality and reliability in every detail.

Technical details of the Korn recycling plant

**Hall 3 – sorting and treatment plant**
- Ground area: 4,500 m²
- Enclosed space: 90,000 m³ (equals approx. 100 detached houses)
- Throughput: 25 tons / hour or 100,000 tons / year
- Output / products: pure fractions; amongst others plastics, iron, non-ferrous metals, minerals, paper and cardboard, wood, glass, and high-quality substitute fuels in the core business.
- Length of the conveyor belts: more than 1,200 m.
Protection before a fire can spread

Recycling industrial waste carries a number of risks that can result in fire.

The reason: the materials are highly flammable. If the materials or a hot surface ignite a spark, the inflamed materials are transported by the conveyor belts and the fire can spread rapidly throughout the whole plant. In addition to that, the conveyor belts split into different directions.

The result: burning materials are carried into different parts of the plant. In order to minimize the risk for fire it is essential to secure hazards that could trigger a fire as early as possible. Therefore a recycling plant needs stationary fire protection that activates within seconds. The consequences of a fire in the plant could be fatal: on the one hand immense costs arise for the loss of production and the reconstruction of the facilities, on the other hand a fire in this plant also constitutes a risk for the environment.

Special requirements for the extinguishing system

In order to work effectively, stationary fire protection for the Korn recycling plant has to meet multiple requirements:

- Fast detection of sparks and incipient stage fires
- Activation of the extinguishing process in less than 0.5 s
- Extinguishing the fire without having to stop production
- Autonomous extinguishing system
- Completely automatic extinguishing process
When developing the extinguishing system the goal was to adapt it as individually as possible to the requirements of Korn and to meet the close delivery date of only 6 weeks. An overview of the measures:

- Protection of the conveyor belts with permanently installed pipes and special CAFS nozzles
- Object protection through additional hose reels for manual operation
- 2 Trolleys for the shunting area in order to extinguish incipient stage fires right away
- Protection of a total of 3 plants or 10 extinguishing areas with conveyor belts having a width of 800 to 2,800 mm
- Precise extinguishing of incipient stage fires

After a thorough analysis, the fully automatic CAFS indoor extinguishing system proved to be the most effective solution since it covers all security-related aspects.

- Secured operation of the plant through a fully automatic CAFS indoor extinguishing system
- Activation of the extinguishing process in less than 0.5 s
- Application of the established and highly effective compressed air foam system

Nearly all Rosenbauer fire extinguishing systems are based on the innovative compressed air foam system (CAFS). Here are just a few of the many advantages that come with CAFS:

1. Foam expansion is actively controlled in the CAFS mixing chamber, i.e. in surroundings that are protected against environmental influences. The retardant foam is distributed over the entire base of the fire.
2. Compressed air foam, with its uniformly high foam quality, adheres to hot surfaces.
3. Less extinguishing water evaporates. This leads to more efficient firefighting due to less water vapor and better visibility.
4. Flames are deprived of oxygen and extinguished more rapidly.
5. Provides enhanced protection against backburning.
6. Moderate application rates ensure efficient firefighting and keep water damage to a minimum.
7. CAFS gives extended range and is sure to blanket the fuel.
Statements.

“When we decided to equip our facilities with stationary fire protection to protect the waste sorting plant and the refuse derived fuel treatment plant, there was no optimum solution on the market yet. Because of the high risk of fire during the production process and the special requirements of the most modern treatment plant in the world, we have decided in favor of an energy independent extinguishing system and have found a reliable partner in Rosenbauer. This extinguishing system with compressed air foam constitutes the optimal protection.

A combination of permanently installed pipes with special nozzles, hose reels for manual operation, and Trolleys were installed in nearly no time without any problem. The extinguishing system is easily operable and is based on the innovative compressed air foam system that protects our plant the best way possible. In addition with the spark detection system from GreCon our production process is secured optimally. When the extinguishing system is activated, there is only a short standstill in the production.”

Dietmar Joost, Head of the plant for the treatment of fuel substitutes, Korn Recycling GmbH

“The Rosenbauer CAFS extinguishing system has become even more effective through fast and sensitive spark detection. Due to the warning device’s ability to detect the smallest glowing embers on the conveyor belts and to spot flying sparks in the suction pipe, incipient stage fires can be extinguished fully automatically. This leads to the absence of follow-up costs and the reduction or prevention of downtime.

All components of the detection system are tested by the VdS and are put into operation by GreCon as an approved installation firm. All relevant parameters of the fire extinguishing process and the detection are supervised and stored by the alarm center. Failures are reported right away and a history of the event is can be retrieved at any time. The GreCon infrared warning device far infrared spark detection system (DLD) is suitable for the rough industry environment, also at the possible presence of external light.”

Dipl.-Min. Ralf Steiner, Area sales manager South, GreCon GmbH & Co. KG