



# PROBLEM SOLVED™ PAPER

**SOLUTION:** Martin® Air Supported Conveyor

**INDUSTRY:** Biomass

**LOCATION:** Emden, Germany



*Total elevation of 29.5 meters (97 feet) over its span*



*Able to power up to 600 feet (183 meters) of belt with a single low-power fan*



*To accommodate space limitations at the Emden facility, the conveyor structure was engineered with an innovative triangular framework*

## PROBLEM

The plant needed a conveyor with a relatively long span to transport bulk materials 548 feet (167 meters) from the ship unloading facility to two silos. With the plant being located next to the sea, corrosion protection was essential to the conveyor system's durability. Complicating the engineering task was a limited amount of available space for the conveyor's support structure. Another challenge was to prevent the escape and buildup of fugitive material while protecting the load from rain and moisture.

## SOLUTION

The company chose a lightweight conveyor design with a history of delivering excellent dust control from Martin Engineering. The Martin® Air Supported Conveyor is a simple and economical system that resolves many of the issues encountered with conventional belt conveyors.

## RESULTS

Engineered with an innovative triangular framework and constructed of galvanized steel to withstand the coastal climate, the high-strength modular design was able to span the entire distance with just two intermediate supports. The concept of the air-supported design is fairly simple, with the load zone and carrying sections contained in a plenum, which is pressurized by a centrifugal fan. Holes in the top of the plenum create an air film between the plenum and belt, which supports the moving load. The Emden plant reports extremely low-maintenance service from the air-supported design. The conveyor has exceeded the company's 98% operational requirement, and the fully-enclosed system prevents the escape of dust. The facility converts approx. 130,000 metric tons of biomass into energy each year, with the conveyor transporting 110-120 metric tons per hour. By eliminating idlers and pinch points, the system further reduces maintenance requirements and potential safety risks.