

Chain case-studies from HEKO Ketten

HEKO is one of the world's leading manufacturers of chains and accessories for bucket elevators and chain conveyors for the bulk handling industry. The company manufactures a large variety of chains, chain wheels, sprockets, shafts, pans, rollers, chain accessories and unit assembly for conveyors, including bucket elevators, pan conveyors, drag chain conveyors and portal reclaimers. Over the years HEKO has become a leading manufacturer of bushed conveyor chains. Its highly wear-resistant chains and accessories are well established all over the world and their efficiency is successfully proven under the harshest environmental conditions. Celebrating 100 years of business in 2017, some cement sector case-studies from HEKO and its subsidiary KoWey are presented below...

The production of HEKO's bushed conveyor chains is performed by applying state of the art manufacturing technologies to high-grade European steel. Bolts, bushes, toothed and toothless chain

wheels or segments, hubs and shafts are manufactured in state-of-the-art CNC-based machining facilities. These facilities are also used to machine the round bores in the link plates to provide a continuous high press fit between bushing/bolts and chain link plates and, additionally, to guarantee a straight and non-twisted chain. Flat link plates are produced in a modern computer-based laser cutting centre allowing for the highest precision and cost-efficient production.

In general, the service life of bushed conveyor chains depends on the wear of the chain link joint, i.e. the contact area of bolt and bushing. Accordingly, hardening is the key to the manufacture of high-quality and wear-resistant conveyor chains. This has been given high priority by HEKO for decades. The selection and definition of the appropriate heat treatment procedure is performed in order to maintain long time service life of the respected component. The company runs its own state-of-the-art heat treatment facilities for case hardening, tempering, quenching and induction hardening.

The latest step in case hardening has been the introduction of vacuum technology. Products are carburized in vacuum chambers and quenched in a helium atmosphere. High wear resistance and hardening depths are achieved, while still maintaining a tough core. Typical case hardened parts are bolts, bushes and rollers. HEKO also performs quenching and tempering under inert conditions.

The chain assembly of all HEKO bushed conveyor chains is performed using modern powerful press and individual assembly tools of the highest accuracy and the entire route of production is accompanied and controlled by extensive sample testing in the HEKO laboratory.

Exchange of bucket elevator central chain

In 2014 HEKO-KoWey delivered and exchanged spare parts, (chain, chain wheels and buckets), for a cement mill central chain bucket elevator in a cement plant in Vietnam. The bucket elevator has a bucket width of 1000mm, a bucket protrusion of 320mm, a capacity of 1060t/hr and a centre distance of 38m.



Retrofit of central chain bucket elevator

In 2014 HEKO-KoWey retrofitted a raw meal central chain bucket elevator at a cement plant in Iran. This central chain bucket elevator for kiln feeding has a capacity of 300t/hr and a centre distance of 25.5m.



Engineering

Besides the standardised HEKO portfolio of bushed conveyor chains and related assemblies, HEKO's engineers and technicians are developing reliable technical solutions and products in close co-operation with its customers.

This customised engineering is not limited to spare parts like chains and related assemblies but is also available for retrofit or upgrade of existing machines as well as realisation of new bucket elevators and pan conveyors. The company applies modern 3D computer-aided design tools for detailed engineering and plant optimisation.

Research and development

Besides the development of customised solutions, HEKO continuously optimises its standardised bushed conveyor chains and associated components in order to meet future demands in terms of conveying capacities, conveying materials and customer requests for further enhanced service life. Permanent technical exchange with universities, research institutes

Spare parts delivery for pan conveyor

In 2010 HEKO delivered and installed deep drawn pan conveyor sections (chain with pans) as spare parts for a deep drawn pan conveyor for clinker transport in Saudi Arabia. The pan conveyor has a centre distance of about 174m, an inclination height of 32.6m and a conveying capacity of 300t/hr.



New deep drawn pan conveyor for clinker

KoWey delivered and installed a new deep drawn pan conveyor for clinker transport in Iran in 2011. The pan conveyor of type KCT10 / 800-300 has a capacity of 300t/hr and a length of 155m.



and clients guarantees a goal-orientated product evolution under consideration of state of the art developing and manufacturing tools. Among other developing tools modern computer based tools, for example finite element analysis, are applied for detailed optimisation and verification of progress. These theoretical methods are complemented by permanent laboratory testing and final operational trials. 