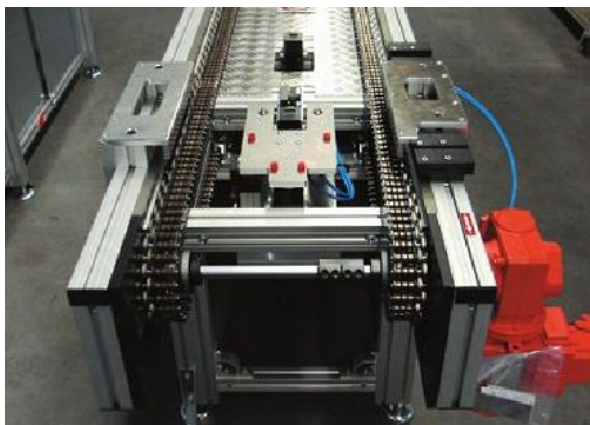


Chain of events leads to continuous conveyor systems

Working together, Altratec Montagesysteme and **iwis** have developed a special-purpose accumulator chain for continuous conveyor systems



Based in the Swabian town of Schwieberdingen, with additional manufacturing in Neukirchen, Saxony, Altratec Montagesysteme manufactures modular transfer systems for production and assembly lines based on aluminium profiles. Accumulation conveyors are a compact method of conveying and buffering workpieces between manual and automated workstations with handling equipment, robotics, and machine tools. The company also manufactures special accumulation conveyors referred to as over-under conveyors with multiple tiers.

Accumulation conveyors have two

An over-under conveyor system with the iwis special-purpose chain

continuous, synchronously running conveyor chains; and workpiece carriers can be accumulated, separated, buffered and – if necessary – positioned at any point along the roller chain. In the carry and return sections, workpiece carriers form a level surface and at the end of the section are scanned for the presence of workpieces. Following this, empty carriers are released for the return journey, and run upside down along the return section. The flexibly joined carrier segments open when deflected in order to pass around a radius and at this point engage positively with the chain. When they reach a workstation they are stopped, separated if necessary, and positioned. The continuous conveyor therefore has a range of applications and, for example, workpieces can be conveyed suspended under the chain as empty carriers return on the top section.

Meeting demands

Being such a demanding conveying task, special accumulation chains are needed. To meet the demands, Altratec worked with iwis to develop an accumulator chain with bolts that are extended on one side and fitted with additional running rollers, allowing the workpiece carriers to be returned along

the chain's return section, removing the need for additional conveying sections for returning the carriers. This not only saved space but reduced the size and complexity of the control system software and hardware: fewer sensors and pneumatic components, no additional motors for lateral movement, and no angular transfer units and lifting stations.

The length and width of the workpiece carriers are joined like a shutter system and can be varied as required for the transported workpieces with aluminium profile segments of 25 x 100mm.

Altratec also uses iwis' chains in conventional continuous workpiece carrier conveyor systems, in curved accumulator chain systems using side bow chains, in modular belt and flat top chain systems, and in side plate chain conveyors.

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Right: Over-under conveyor system



How correct lubrication ensures forklift truck chain performance

As a forklift truck chain, which controls the mast lifting and lower functions, needs to perform at its peak for as long as possible, it needs to be lubricated at regular intervals. However, using the right lubricant is essential. According to FB Chain, the correct lubricant for leaf chain can make a big difference to a chain's performance.

The company has recently undertaken a series of tests that illustrate the impact that lubricant has on a forklift truck chain's lifecycle. Three identical lengths of chain – all manufactured by FB Chain – were coated with three brands of commonly used chain lubricant. The chains were loaded to close to their maximum working load and repeatedly raised and lowered to simulate the action of a forklift truck mast. The first sample seized and would no longer articulate at 40,000 cycles. It was a further 80,000 cycles before the next sample seized and, at the end of the test, the best performing chain oil had outlasted the worst by nearly four times.

Few forklift operators take the trouble to re-oil the chain regularly enough to achieve the chain's optimum life, so the lubricant used needs to be one that does not easily wash off – especially if the forklift is working outside, has to be washed down regularly or operates in and out of a cold store or other environment where condensation build-up can be a problem.



In another test, FB Chain applied the same three lubricants that were used in the wear test to three identical lengths of its own leaf chain, before rinsing the chains with water for one minute then putting them through a salt spray test. The purpose of rinsing the chain with water beforehand was to simulate normal usage when a chain is used in outdoor applications or cold stores. This process enabled the company to assess corrosion resistance. With this test, the oil that had been the second best performer in the wear test did not come out of the corrosion test at all well. The oil proved to have a low viscosity level, which helps it to penetrate between the chain's pins and plates, but allows it to be easily removed when washed. This resulted in the chain showing drastic signs of corrosion after a mere 15 hours in the salt spray booth. For equipment working outside, this particular brand of oil would not stay in place long enough to perform its main function of lubricating the chain.

Of the three oils tested, one clearly offered the best performance in both the corrosion and wear tests – and this is the brand that is applied to the leaf chain when it leaves the factory, concluded Peter Church from the company.

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