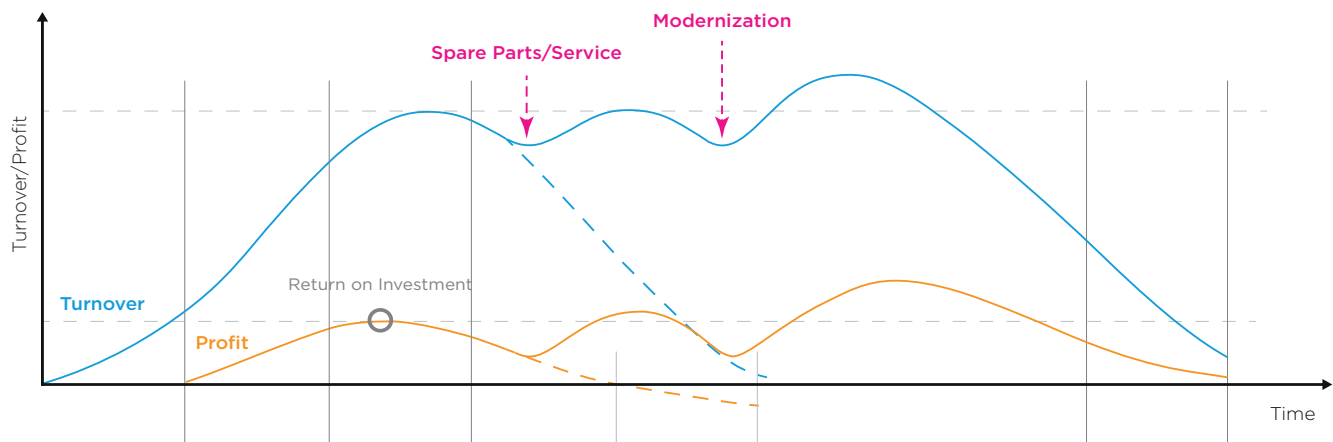


Modernization of Extruders. To Keep Productivity at its Highest.

➤ The goal for Coperion's modernization services is to provide the extruder with the highest productivity level possible. This includes keeping the extruder to its maximum availability and uptime, while giving operators complete machine reliability and safety. Our ZSK extruders can be modified to meet the continually growing production machinery demands surrounding product quality, power density, machine safety, connectivity and uptime.



› MODERNIZATION AND OEM SPARE PARTS EXTEND THE LIFETIME OF EXTRUDERS.

Control Systems

Control systems are often neglected because you cannot see the wear and tear, but their functionality is crucial to ensure the operation of the ZSK extruders.

Hardware - Why you should modernize the hardware of your control system

- › Life cycles of industrial PCs are very short (e.g. Operating Systems OS)
- › Life cycles of electrical components do not match the mechanical counterparts
- › Risk of obsolete spare parts
- › Outdated frequency converters (CAN-Bus) are difficult to replace by new technologies
- › DC technology replaced by AC drive concepts

Software - Why you should modernize the software of your control system

- › Experts for older programming are becoming rare
- › Old software solutions not compatible with latest developments and technologies
- › Older programming is limited in its flexibility
- › Old software is not prepared for today's cybercrime risks
- › Interfaces to DCS are not foreseen in old setups
- › OPC UA communication to MES system
- › Data collection for big data

Why you should modernize your PLC

- › Support for SIMATIC product lines discontinue periodically and must be replaced
- › Source codes (e.g. step7) are not compatible with new versions (TIA Portal) and must be reengineered



COPERION SOLUTION

- › We replace obsolete hardware parts to ensure an up-to-date control system.
- › With the upgrade of your software, you are up-to-date concerning current interfaces and communication with higher level control systems, big data and security matters.
- › With a PLC upgrade, the current standards of the control system are ensured.



- › REPLACEMENT OF OLD HARDWARE PARTS TO ENSURE AN UP-TO-DATE CONTROL SYSTEM



- › SOFTWARE UPDATES ENSURE A SECURE COMMUNICATION WITH HIGHER LEVEL CONTROL SYSTEMS



- › UPGRADE OF PLC TO GUARANTEE CURRENT STANDARDS



Upgrade Opportunities and Debottlenecking

Increasing demands, expectations and standards require a continuous development of the ZSK extruder in order to stay up to date. Since the machine is built modular, we are able to upgrade individual parts by identifying opportunities and

bottlenecks to increase the overall performance of the ZSK extruder. Coperion has a long history in experience for eliminating bottlenecks and can offer solutions tailored to each individual process and customer.

Common bottlenecks at a ZSK extruder

- > Limitations in the control system to communicate, add interfaces or allow Industry 4.0 applications
- > Feed limitations
- > Heating performance
- > Screw speed or product throughput

- > Degassing
- > Reliability and wear resistance
- > Missing sensor technology (e.g. vibration or temperature monitoring)
- > Manual process steps which can be automated

Risk Reduction and Safety Improvements

Many ZSK extruders run for several decades on the highest levels. Over the years operator behavior and regulations have changed. Therefore, we provide the latest safety standards as retrofit kits to upgrade older designs. With Coperion, you have a partner by your side who upgrades your extrusion system according to the current safety regulations to ensure a safe running machine and no danger for the operator.

Common risks:

- › Missing limit switches on maintenance doors
- › Machine access without safety interlocks
- › Software access to unauthorized individuals
- › Missing security against cyber attacks

Environment and Sustainability

More and more companies are increasingly paying attention to social and environmental topics by following regional regulations and initiatives to achieve a better and more sustainable

future. Initiatives place great importance on companies to reduce inequality and environmental impact. Coperion supports our business partners to achieve their goals.

Your Benefits

- › Reduce energy consumption
- › Recover energy
- › Reduce volatile organic compound (VOC)
- › Treat exhaust gases (e.g. from degassing)
- › Reduce waste (e.g. start-up or off-spec material)
- › Process modification to utilize recycled material
- › Secure handling and feeding of critical additives
- › Operator friendly maintenance and operation environment
- › Relate ZSK extruder throughput to cyclical energy costs



GOOD TO KNOW

The [17 Sustainable Development Goals \(SDGs\) of the United Nations](#) recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

To support our customers we have developed not only numerous products but also process solutions for a better future. These include, for example, our technologies for closed-loop recycling, more climate-friendly production of battery masses or modernization of existing systems for our customers to maximize savings in energy and resources.



› SUSTAINABLE SOLUTIONS FOR A BETTER FUTURE



› COPERION RECYCLING SOLUTIONS

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