

SMARTSCRAPER™ CONVEYOR

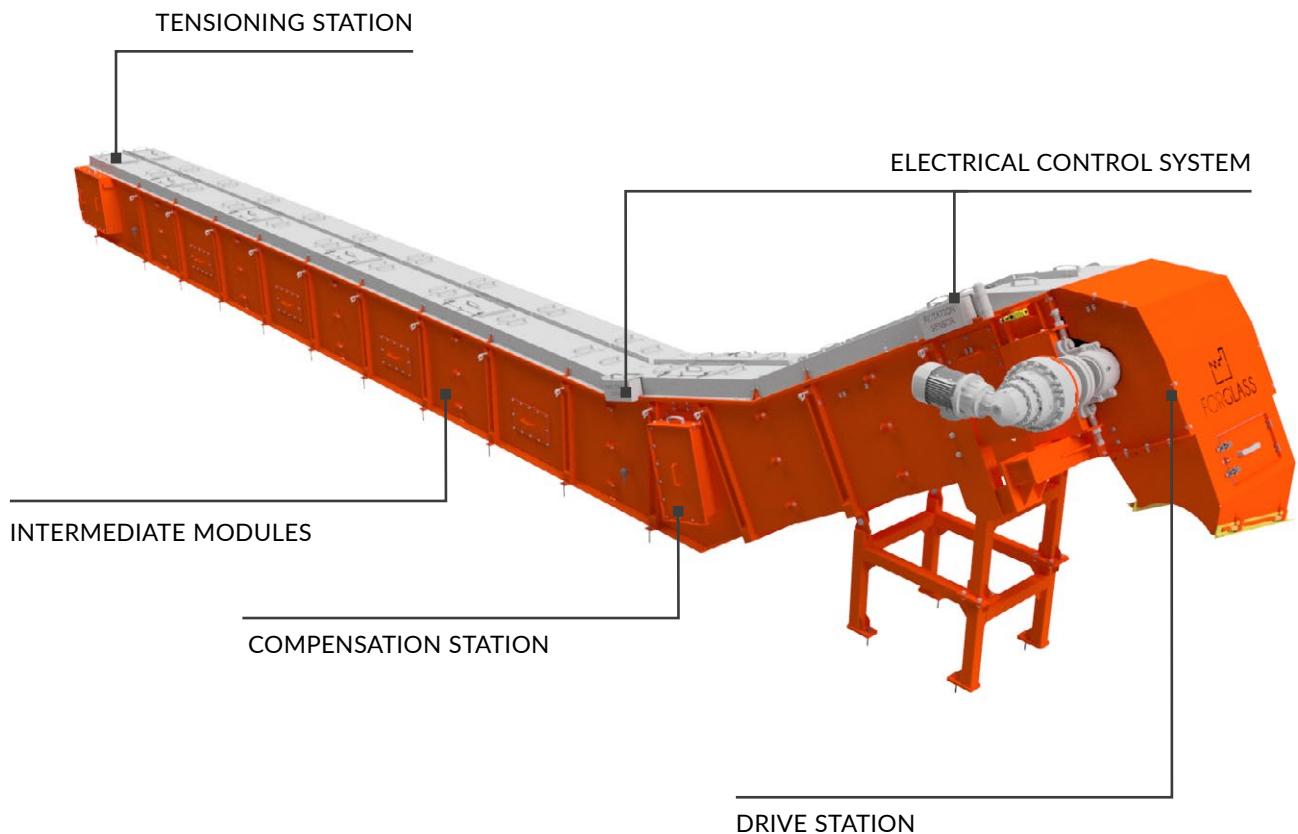
TECHNICAL FOLDER

TECHNICAL SPECIFICATIONS

structure of the conveyor

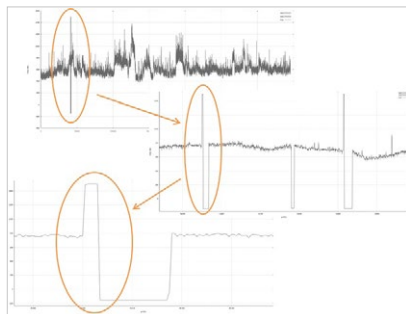
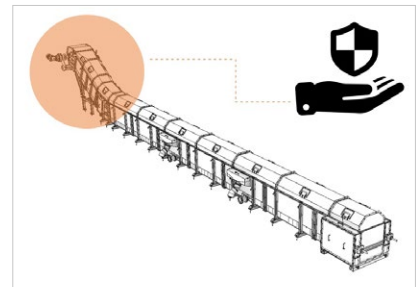
SMARTSCRAPER™ CONVEYOR CONSISTS OF THE FOLLOWING MAIN PARTS:

- | | | | |
|----------|----------------------------|----------|---------------------------|
| A | Overload Protection System | F | Chain With Scrapers |
| B | Drive Station | G | Table For Glass Return |
| C | Tensioning Station | H | Electrical Control System |
| D | Compensation Station | I | Additional Elements |
| E | Intermediate Modules | | |

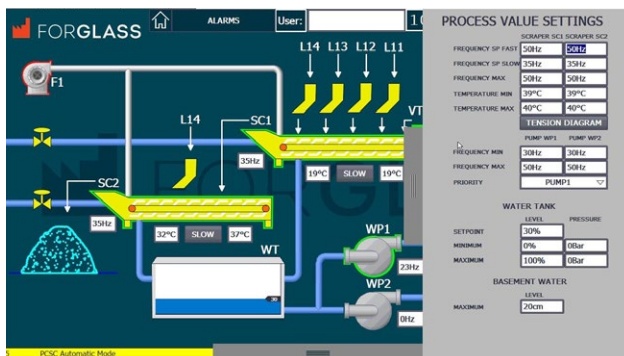


A OVERLOAD PROTECTION SYSTEM

OPS is an intelligent system, which integrated with a machine enables a detailed analysis and a proper reaction for specific situations. Rather than mechanical protection, this system uses electronic sensors to continually monitor the working conditions of the SMARTSCRAPER™ conveyor, diagnose problems and react instantly to changes in operation.



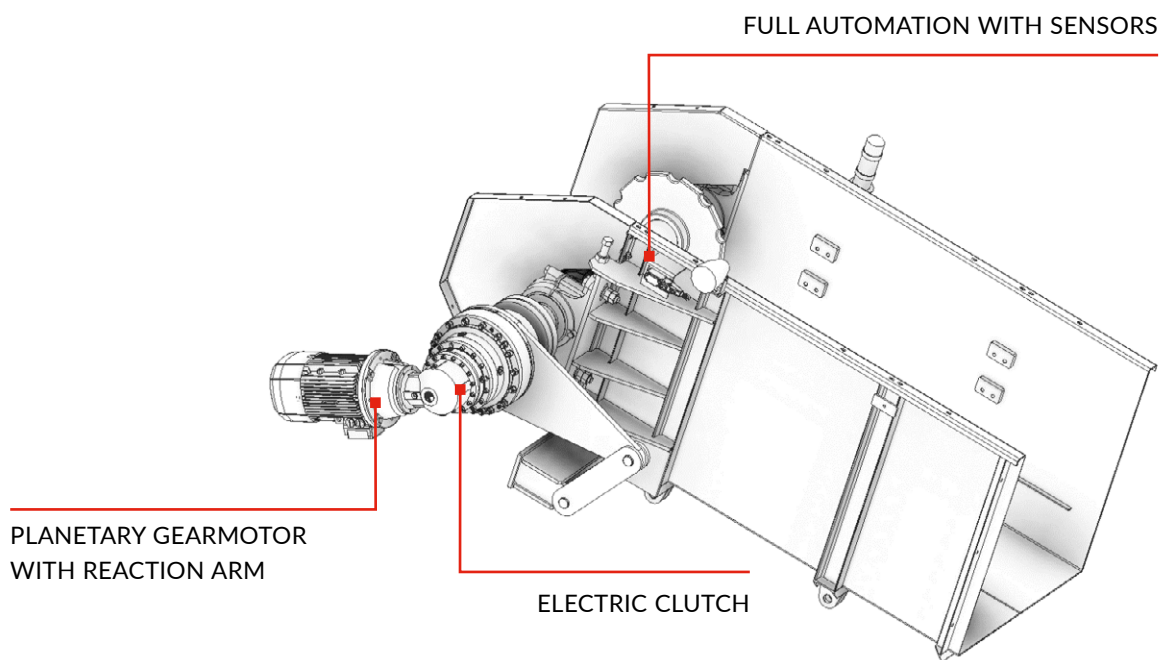
The OPS solution is very effective in its simplicity. A standard setting offers 3 operation thresholds. First one represents normal working conditions. When a situation occurs that is considered potentially dangerous, the second threshold is reached and an alarm is activated. When there is no response or if the overload reaches the third threshold limit, the conveyor stops automatically, preventing damage to its parts.



Functioning of a smart scraper conveyor is continuously monitored in real time and can be controlled remotely. The entire process is maintenance-free and automatic, generally not requiring any manpower. The system stores event history data, allowing its analysis, so that conclusions can be drawn to prevent such situations in the future.

B

DRIVE STATION



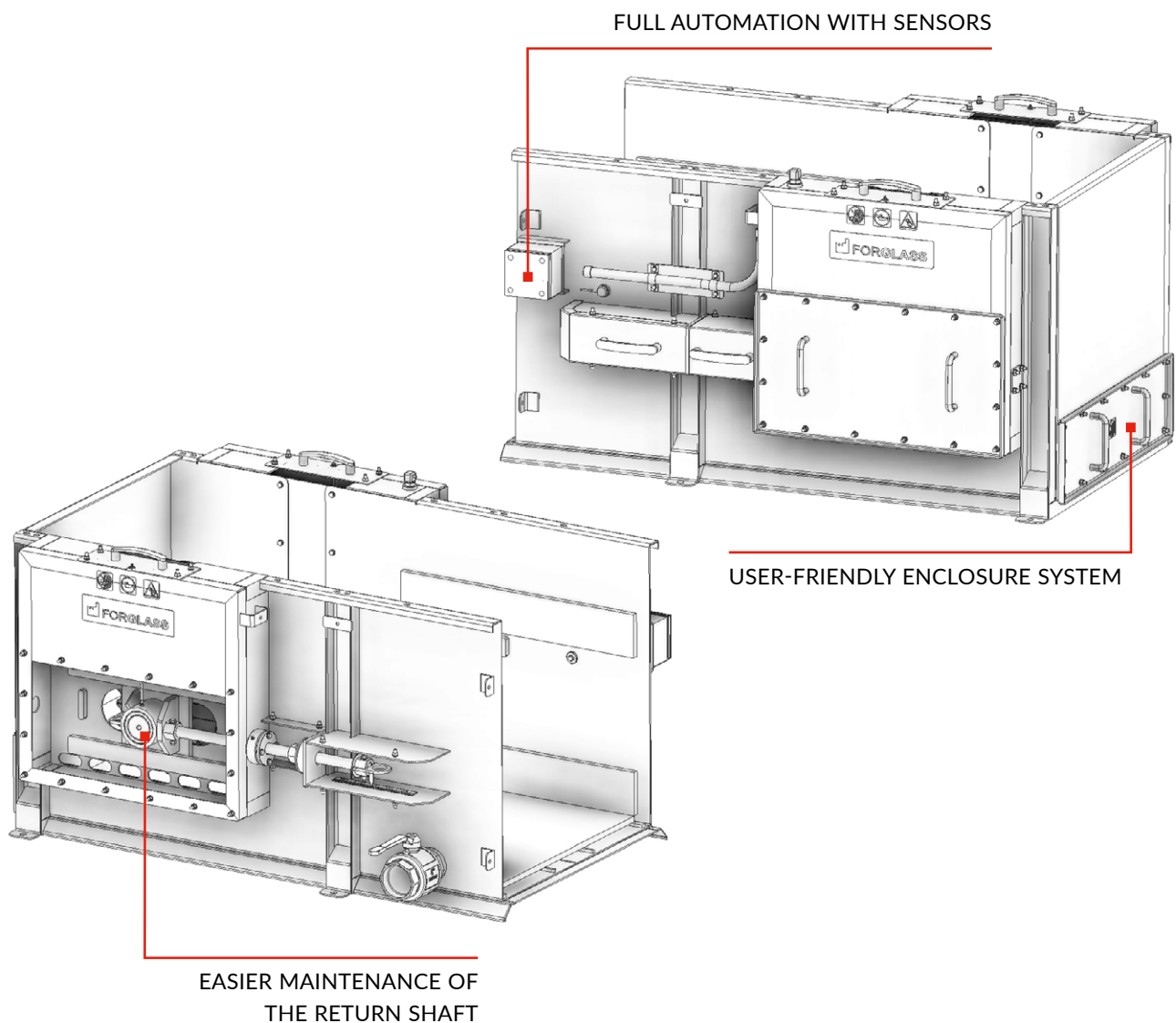
INNOVATIVE MOVEMENT

The SMARTSCRAPER™ uses a special drive system: the highly efficient planetary gearmotor is connected directly to the shaft. No additional drive chains are used. Furthermore, we equipped our SMARTSCRAPER™ conveyor with an electric clutch, which protects the system against overloads. When the scraper becomes blocked, the clutch allows the conveyor to stop. The conveyor can be restarted immediately after removing the obstacle, without any additional work.



C

RETURN STATION

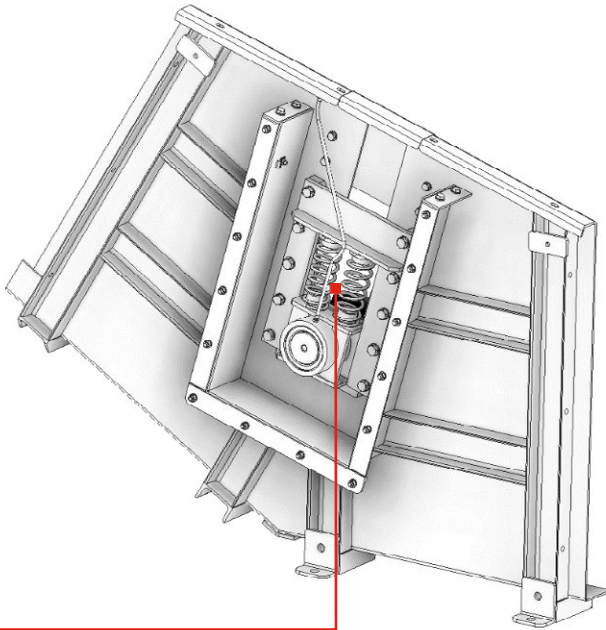


ADVANCED TENSIONING

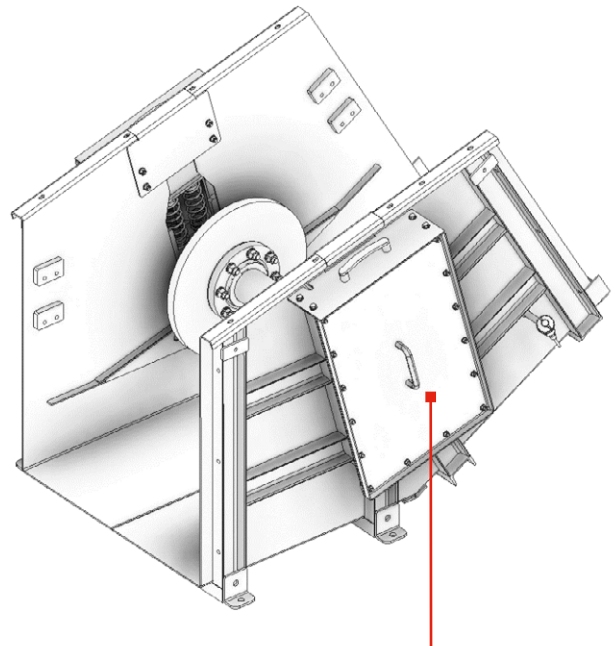
The scraping conveyor is often placed in narrow basements, where access for maintenance work is difficult. In such places, every millimetre counts. The modernized return station allows for easier maintenance of the return shaft. Since during normal operation the conveyor is filled with water, we placed all lubrication and maintenance access points, as well as sensors, on the outside of the machine.

D

COMPENSATION STATION



FREE-RISING SHAFT
WITH SPRING SYSTEM



EXTERNAL BEARING SYSTEM
WITH LUBRICATION

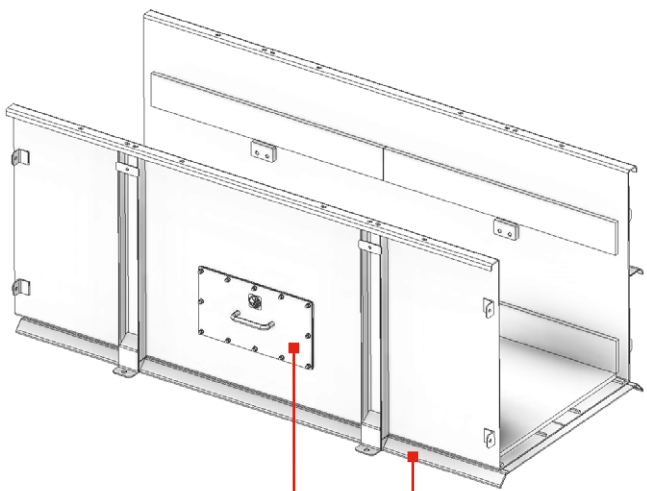
STABLE PERFORMANCE

During normal work of any scraping conveyor, various types of overload affect the chain, which translates into its pulsating tension. The SmartScraper's free-rising shaft is built on a special spring system that is designed to cushion and compensate for chain spikes. This station is also user-friendly thanks to its comfortable maintenance access. All sensors and lubrication points are placed on the outside of the machine.



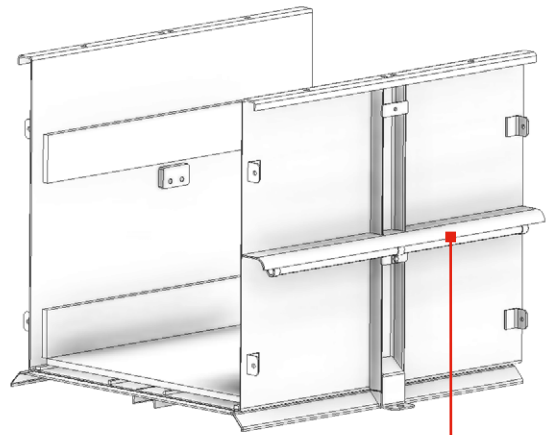
E

INTERMEDIATE MODULES



UNDER-TABLE
INSPECTION HATCHES

CLEAN DESIGN



SAFE CABLE ROUTING

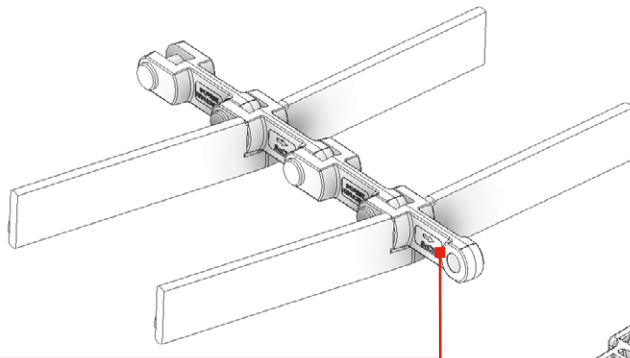
MODULAR SYSTEM

The SMARTSCRAPER™ conveyor is based on a modular system of stations, making it easy to combine with other machines and peripherals. Intermediate stations consist of repeatable modules with a length either 1200 or 2400 mm, so that all internal liners and slides are also repeatable elements. The stations have inspection hatches for maintenance inside the conveyor under the tables with no need for disassembly. Our clean design philosophy also means that the SMARTSCRAPER™ is much easier to keep clean.

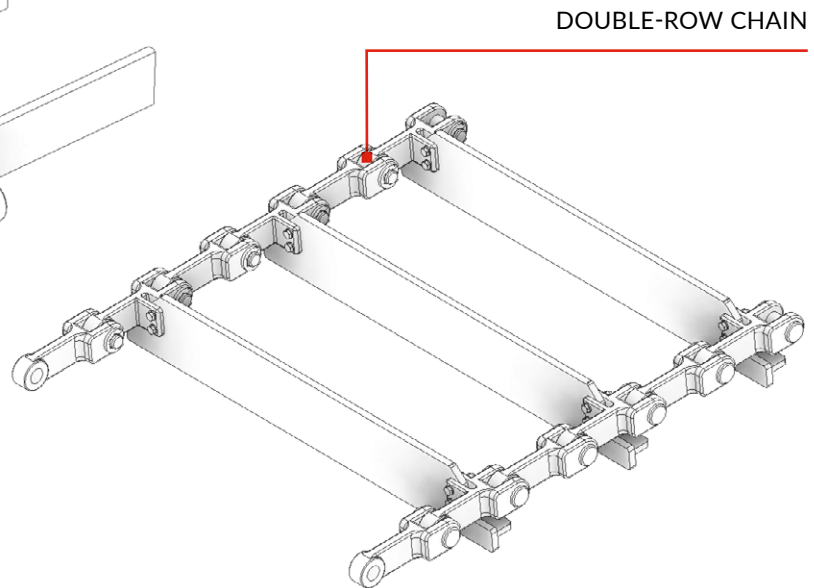


F

CHAIN WITH SCRAPERS



SINGLE-ROW CHAIN



DOUBLE-ROW CHAIN

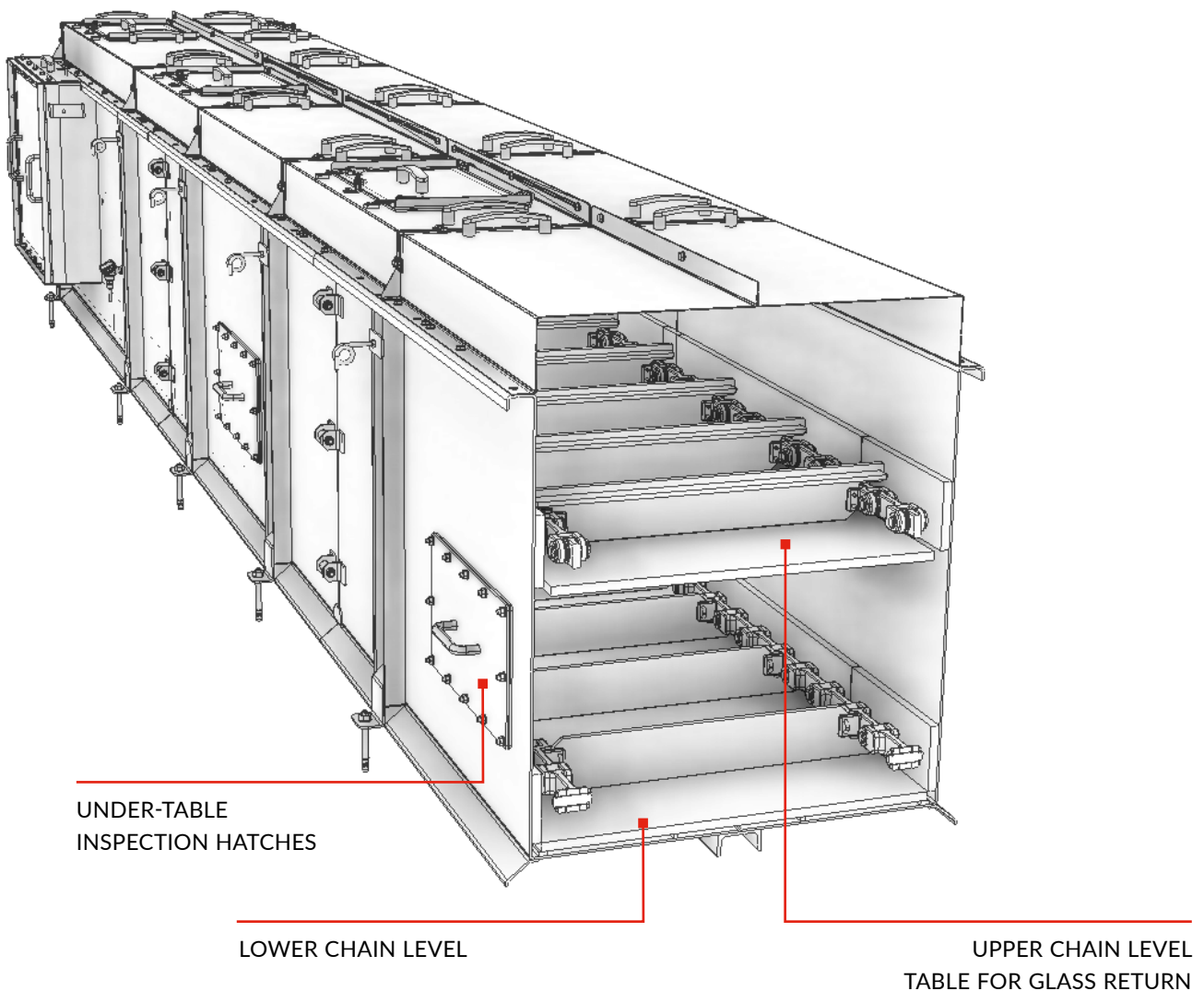
CONVEYORS' SPINE

Key element of the scraper conveyor is its chain. Forglass offers one- and two-row chains made of light and very durable forged links. Double-row chain in this arrangement allows for easy addition of links with scraper bars to obtain higher efficiency of the machine. The scraper bars have hardened edges on the top and bottom, providing scraping function in both directions of the chain.



G

TABLE FOR GLASS RETURN



CHILLING ROUTE

The most important stage of receiving and transporting hot glass is cooling it before the material is passed to the next stage of processing. For this purpose, the SMARTSCRAPER™ is equipped with a table constructed of special steel plates, located under the upper chain level. The table is used for extending the path that the returning hot glass has to travel under water. This ensures sufficient cooling before the glass is discharged from the conveyor.

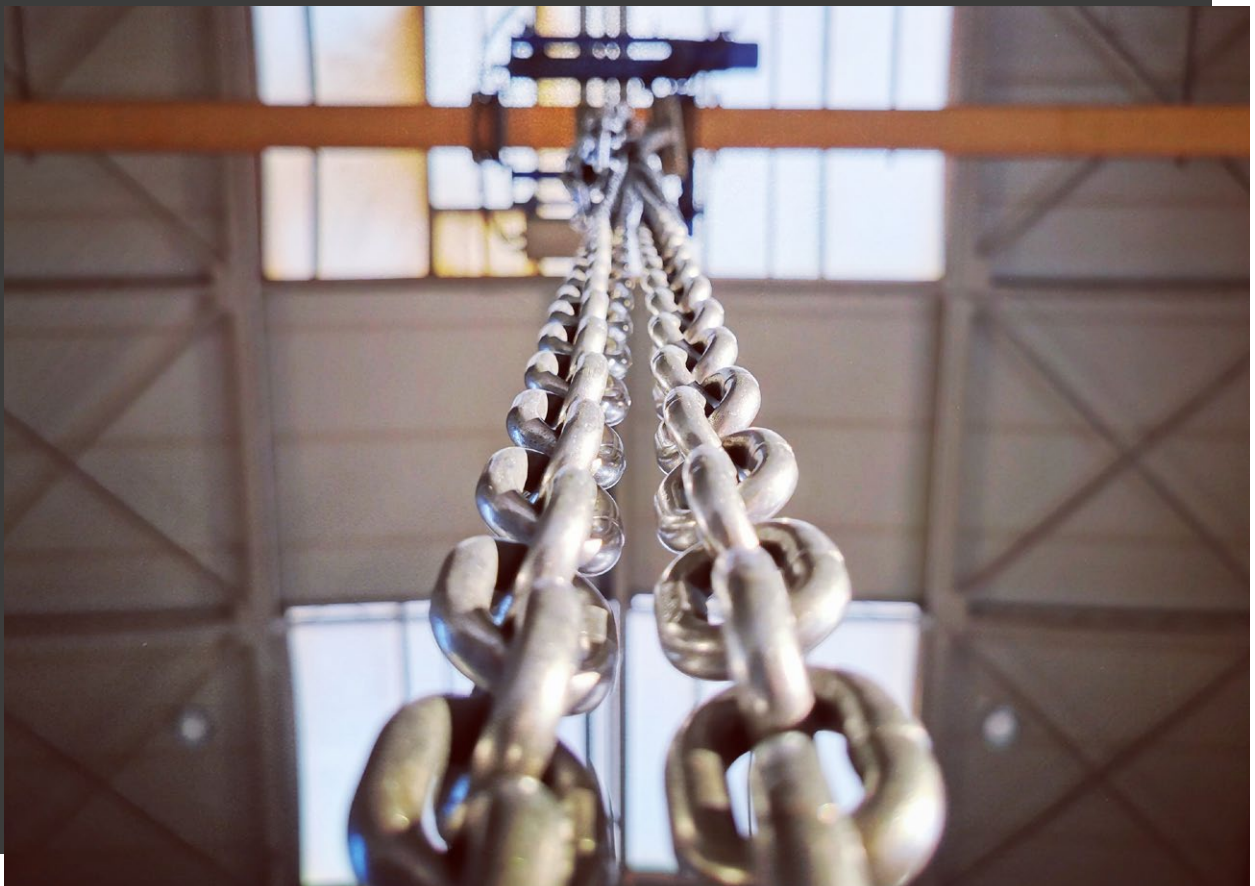
H

ELECTRICAL CONTROL SYSTEM

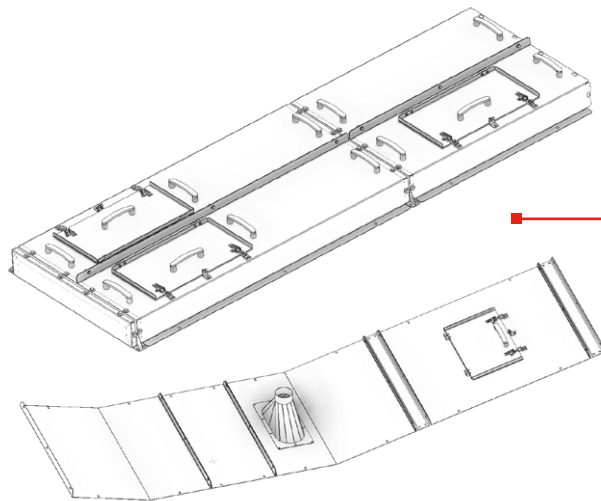
1. Variable frequency, adjustable by inverter
2. Star-delta starter (in case of emergency)
3. Water level and temperature sensors
4. Automatic water dosing system (optional)
5. Chain motion sensors
6. Chain tension / lifting sensors
7. Remote controlling possibility
8. Led/horn emergency signalization
9. Emergency trip (rope) switches

COMPLETE DIAGNOSTICS

Thanks to the full diagnostic system, it is possible to constantly monitor and remotely view a number of conveyor operation parameters. This allows better planning of maintenance by estimating the service life of individual components. The scraper conveyor becomes a transparent tool in your hands.

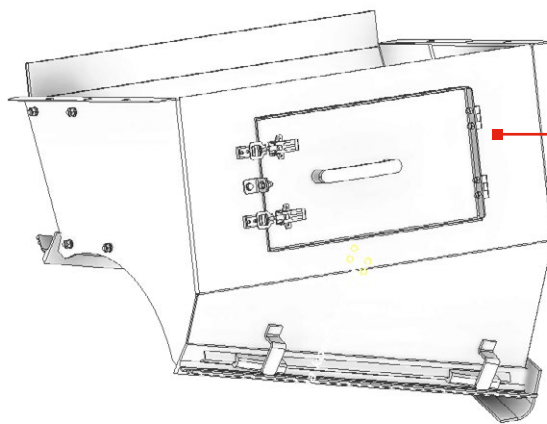


ADDITIONAL ELEMENTS



PROTECTIVE COVERING

Covers on the top of the conveyor are purpose-made: light perforated steel plates or full covering for steam extraction systems.



DEDICATED OUTLET

As a part of the cullet return line, scraper conveyor must be compatible with other machines (e.g. belt conveyor) with which it must work. Smartscraper's outlet is designed to match the line specification provided by client.

PROGRESS THROUGH TECHNOLOGY

We combine more than 30 years of experience in glass melting with the most advanced technology in designing, engineering, fabricating and erecting glass furnaces and batch plants. We deliver predictable Industry 4.0 solutions that advance glass production for our clients into the future.

For glass manufacturers, safety and reliability are two of the most important values in their factories. Drawing on our extensive experience, we are able to ensure both safety and reliability without sacrificing performance.

One of our strengths is understanding both the supply market and the needs of the individual glassworks. This means we are better able to design machines that not only meet our Clients' needs, but that exceed their highest expectations. Our R&D department works continuously to develop devices that are more reliable, more efficient, and more human-friendly by taking full advantage of the rapid development of "intelligent" and fully integrated Industry 4.0 solutions.

