

Plug-in Crosscut Element PCE



Trend-setting technology for the assembly and installation of prefabricated crosscut closures and ends



ELKUCH GROUP



Highly standardised prefabricated wall elements for tunnel construction

an innovative solution from Elkuch.

With the new Plug-in Crosscut Element (PCE), Elkuch has developed an innovative concept for the cost-effective implementation of prefabricated wall elements in tunnels with a demanding installation environment.

The idea is simply ingenious. Prefabricated in the workshop, these fully functional and tested wall systems are delivered to the crosscut in the tunnel with special transport aids and adjusted with low tolerances. Elaborate on-site work, such as for formwork, concrete work, drilling and system installations and assembly, is eliminated.

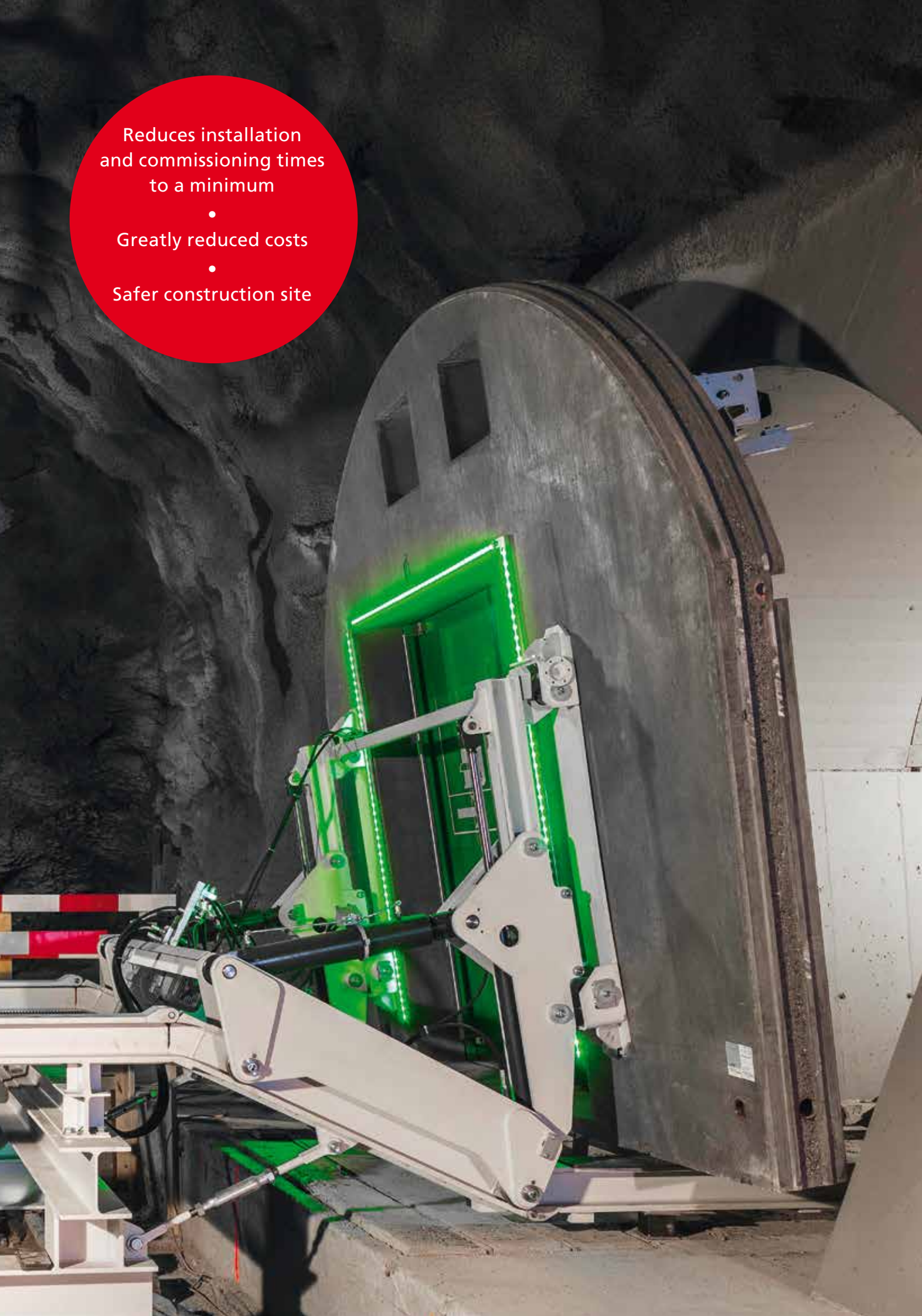
Enormous benefits. Expensive installation hours in the tunnel, salary surcharges and unproductive travel hours are reduced to a minimum. The ergonomic workshop environment ensures increased work efficiency and safety. The use of less expensive finished concrete instead of in-situ concrete enables further cost reduction.

With the assurance of Elkuch. Over 50 years of experience in the development of industrial and fire escape doors form the basis of our innovative tunnel gate systems. Customers benefit from comprehensive support during consultation, technical implementation, production and assembly. Professional maintenance and service concepts are a matter of course.

Reduces installation
and commissioning times
to a minimum

- Greatly reduced costs

- Safer construction site





An overview of the “Plug-in Crosscut Element” system advantages

Basically, this clever system functions in every kind of cross-connecting gallery. A prerequisite for a smooth execution is a corresponding project planning during the shell construction planning as well as a 3-D laser scan of the cross-cut ends.

- 15% reduction in manufacturing costs.
- Up to 90% savings in the installation and commissioning time.
- Precise prefabrication of the wall elements in a safe workshop environment.
- Exact measurement and precise pre-assembly of all elements outside the tunnel.
- Extensive testing of all assemblies and systems, such as ventilation units, control cabinets, fire dampers, doors, lighting, signs, etc. (BIM capable).
- High system security through pre-verified modules and components.
- Increased safety through lower personnel requirements in the tunnel. Most work steps can be carried out in the familiar environment of the workshop.
- Full accessibility to the crosscut for further installations up to the last possible point in time.
- Includes RFID technology for rapid component identification.



Step 1



Step 2



Step 3

The Elkuch formula for efficiency in tunnel construction:

Conventional method

3 workers,
3 days*

*for the installation of one door in the tunnel

PCE System from Elkuch

3 workers,
90 minutes

Your advantage

up to **15% lower**
manufacturing costs

up to **90% lower**
installation expense

The “Plug-in Crosscut Element” in application

90 minutes, 3 workers and Elkuch – the new formula for the efficient installation of a PCE. Thus, up to 6 units can be installed per work shift and unnecessary blocking times avoided.

Step 1:

Measuring. A 3-D laser scan is required for the precise design and execution of the PCE. The latest measuring technologies allow an efficient and high-precision recording of the geometry.

Step 2:

Prefabrication in the workshop. Outside the tunnel and in a secure, economical work environment, the concrete element is manufactured exactly according to the measured data. All necessary interfaces, such as threaded sleeves, mounting rails, etc., as well as systems such as RFID tags, are precisely prepositioned.

After curing, the element is attached to a special transport device. All additional assemblies and systems, such as ventilators, doors, control panels etc. are preassembled, verified and sealed for transport.

Step 3:

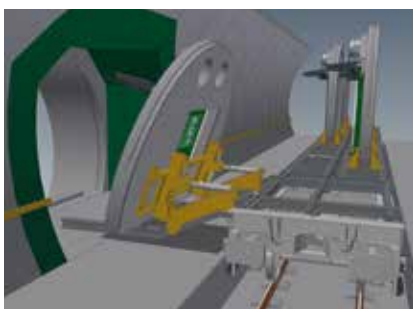
Transport. The PCE units are transported by rail car or low loader (standard ISO container connections) to the specific installation site just in time. Up to six units can be mounted per work shift.

Step 4:

Assembly. Using a manipulator, the PCE is moved to its final position with a 10-20 mm gap and attached to a crosscut wall with bolts.

Step 5:

Preparation for the next crosscut. The sealing with fire-resistant joint grout completes the installation. The PCE can be immediately connected to the power system and connected to the tunnel control technology. Without any downtime, the manipulator picks up the next PCE unit for the next cross passageway.



Step 4



Step 5

Pure efficiency
step by step

innovative object-specific durable

Your partner for tailor-made door solutions

Elkuch Bator AG

Within the Elkuch Group specialised in:

- Tunnel construction: emergency and escape doors, gates
- Special construction: systems and machines

Thanks to its extensive network of contacts and its inclusion in the Elkuch Group, Elkuch Bator always has the necessary capacity to implement highly sophisticated systems and solutions in important major projects such as the Lötschberg Base Tunnel, Gotthard Base Tunnel or the Ceneri Base Tunnel as well as the Nant de Drance pumped storage power station. A large number of already completed projects serve as a reference for the competence and performance capability of Elkuch Bator in tunnel construction.