

Niayesh Tunnel Project in Tehran, Iran

**Civil Engineering /
Tunneling****Gigantic tunnel project with help from Leister**

The Niayesh tunnel project is the largest ongoing civil engineering project in Iran. Tehran's urban tunnel, 10,252 m long, is the second longest tunnel in Asia for auto traffic, after the Baotashan urban tunnel in China which is 10,480 m long.

Built in the shortest time

Two main traffic arteries on multiple levels including ramps and loops were built in Tehran. When the entire project is finished, the traffic situation in the Niayesh section of the city should be decongested and the primary traffic route along the east-west axis transferred. There is also the promise of «a positive change in the city and an improvement in the standard of living» (project text). The tunneling

rate was 18.5 m per day and the entire volume an impressive one million m³! At times, 5000 people were at work on the project. For the main Niayesh tunnel, 245,000 m² of geomembrane were built in, of those, 195,000 m² were single layer PVC sheeting and 50,000 m² HDPE geomembrane, both 2 mm thick. The entire geomembrane work here lasted only around six months.

Performance and reliability

Leister Technologies AG was chosen for this project not only because the Swiss company is the leading supplier of plastic welding solutions, enjoying an excellent international reputation: The geomembrane manufacturer also chose it based on the company's more than 10 years of positive experience.



Soldadura de techo con el dispositivo automático de cuña térmica COMET.

Particularly appreciated was also the performance, reliability, ease of handling and reproducible quality in the welding seams. The welding machines again proved their qualities during the overhead welding in the tunnel. The TWINNY T and COMET easily glided from one side to the other of the tunnel cross-section once put into the proper position for the overlapping sheeting. Both models have digital displays for controlling and correcting the hot air temperature and speed parameters at any time. The pressure from the pressure rollers can be easily adjusted to conform to the material thickness. Both models also use USB technology. This allows the consistent recording of all relevant welding parameters and thus the actual data of every few centimeters are reported.

Tightness is a priority

Because of the size of the project, multiple Leister machines were used at the same time: Five TWINNY T combi-wedge welders and ten COMET wedge welders as well as a FUSION 3 extrusion welder and more than 30 TRIAC S hot air tools. The two different welding machines, TWINNY T and COMET, proved themselves in underground construction as well as for the actual tunnel sealing system. They joined the double-weld seams at a speed of 2 to 2.5 m/min. Double-weld seams are important for inspecting the tightness of the seal for both seams after the welding process. By injecting a needle and compressed



Trabajos de precisión con el TRIAC S. A la derecha el nuevo TRIAC ST.



air into the space between them, any leaks can be detected and patched if needed. This prevents water from penetrating once construction is completed with certainty.

Extrusion welders and hot air hand tools

The FUSION 3 was used for the detail work in the underground sections. With this extrusion welder, the extrudate can be applied while working in a perpendicular position. The process uses a retracted plastic welding wire which is first cut up and then melted on. With up to 3.6 kg/h extrudate, the FUSION 3 is particularly helpful for seams and corrections. More than 30 hot air tools TRIAC S were put to use wherever the welding machines could not go, in spite of their flexibility, and whenever welding seams needed to be reworked. The TRIAC S has been, by the way, the internationally most used hot air tool for years. The latest generation, the TRIAC ST, has a two-



Sistema completo del túnel con sus dos arterias principales, vías de acceso y enlaces.

component handle grip and sits in the hand better than its predecessor.

Counteracting the traffic chaos

Thermoplast Mfg. Co. is the exclusive Leister Sales and Service partner in Iran. A long-term partnership stands behind the geomembrane manufacturer and supplier and Leister. For the gigantic Niayesh project, Thermoplast not only supplied machines and took care of servicing as needed, it organized additional technical experts. Leister Technologies AG and Thermoplast Mfg. are accordingly proud to have made a contribution to this important project that is effectively counteracting the traffic chaos in Tehran.



La pantalla permite una perfecta visualización de los datos sobre la temperatura y la velocidad de soldadura.

Machine supplier:
Sales and Service partner:

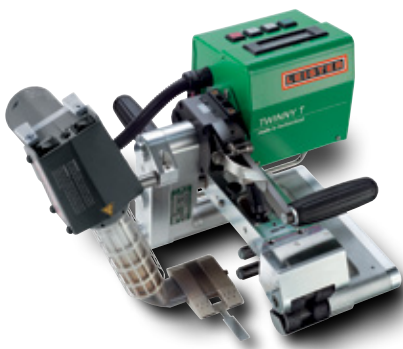
Leister Technologies AG, Switzerland, www.leister.com
Thermoplast Mfg. Co., www.thermoplastcompany.com

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Thermoplast Mfg. Co. / Christophe von Arx, Leister
Thermoplast Mfg. Co.

Leister devices in use

Soldadora automática de cuña combinada
TWINNY T



- Fácil manejo
- Indicación digital de temperatura y velocidad
- Temperatura y accionamiento regulados
- Excelentes resultados de soldadura, también en condiciones ambientales desfavorables, gracias al sistema de aire caliente

Soldadora automática de cuña térmica
COMET

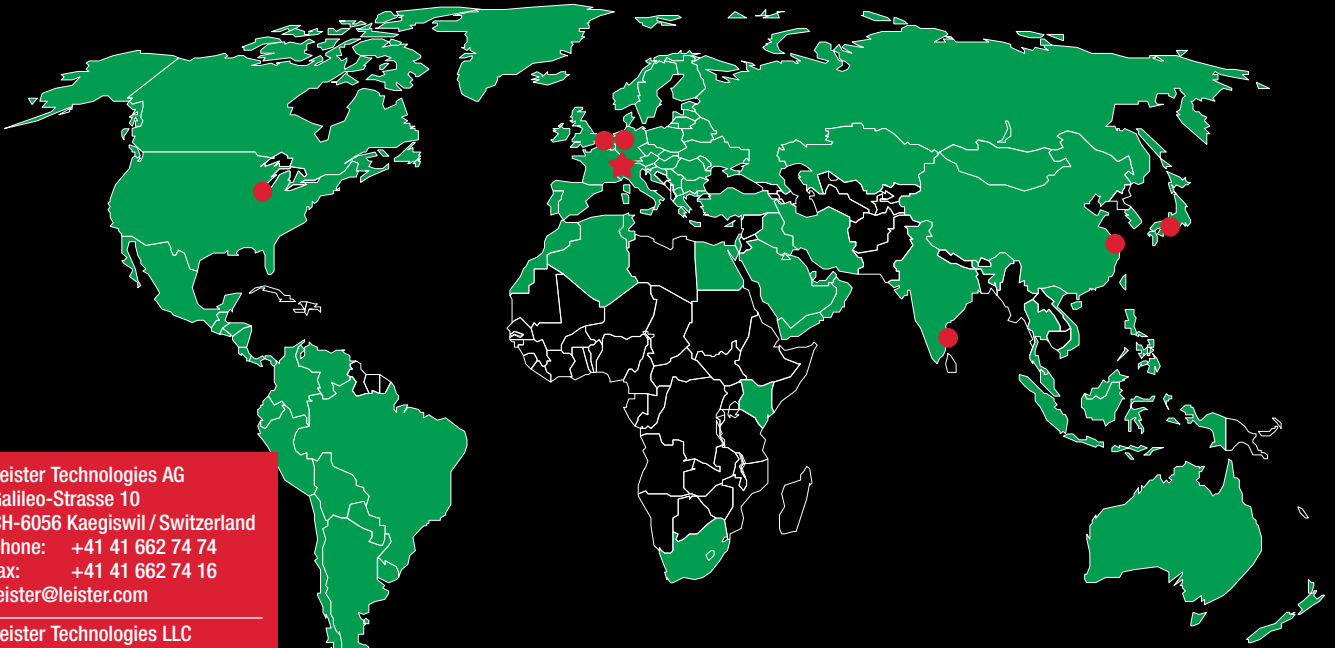


- Ligera y compacta
- Indicación digital de temperatura y velocidad
- Temperatura y accionamiento regulados
- Fácil y cómodo manejo

Air heated extrusion welder
FUSION 3



- Gran potencia de soldadura
- Compacta y manejable
- Protección contra el arranque del motor que evita un arranque en frío
- Entrada de hilo sin torsión a ambos lados
- Patín de soldadura giratorio, 360°



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We are local. Worldwide.

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