

Etac grout injection is a Dutch company that is introducing a two-component grout developed in Japan to the European market. Two-component grout is a tail-split filler used in the boring of segmented tunnels. Because the tunnel-boring machine has a larger diameter than the external diameter of the tunnel itself, it is necessary to fill the tail split thus created. This is necessary to prevent the collapse of the surrounding ground that would otherwise occur.

The use of the etac grout injection system leads to:

1. a more efficient tunnel boring process
2. quicker and better support of the tunnel lining
3. less influence on the surrounding area

Because the tunnel boring process is more efficient, the parts of the installation and the set-up of the working area are notably less extensive than is usual for conventional installations. Also, the methodology of the process is particularly easy to understand and to influence.

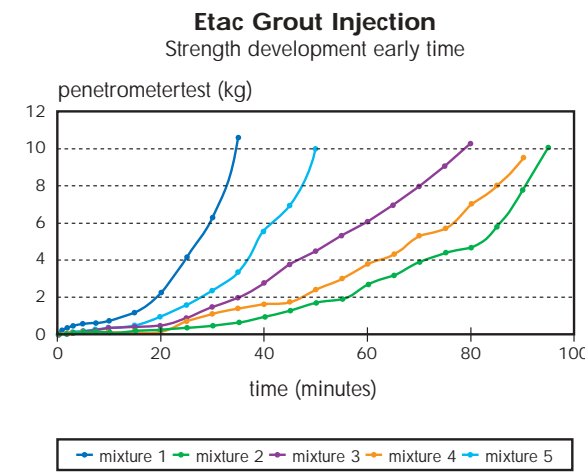
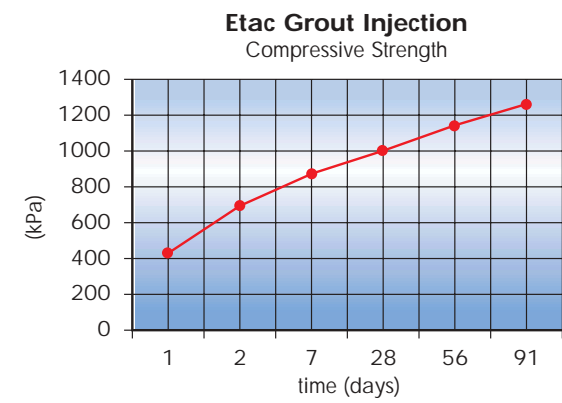
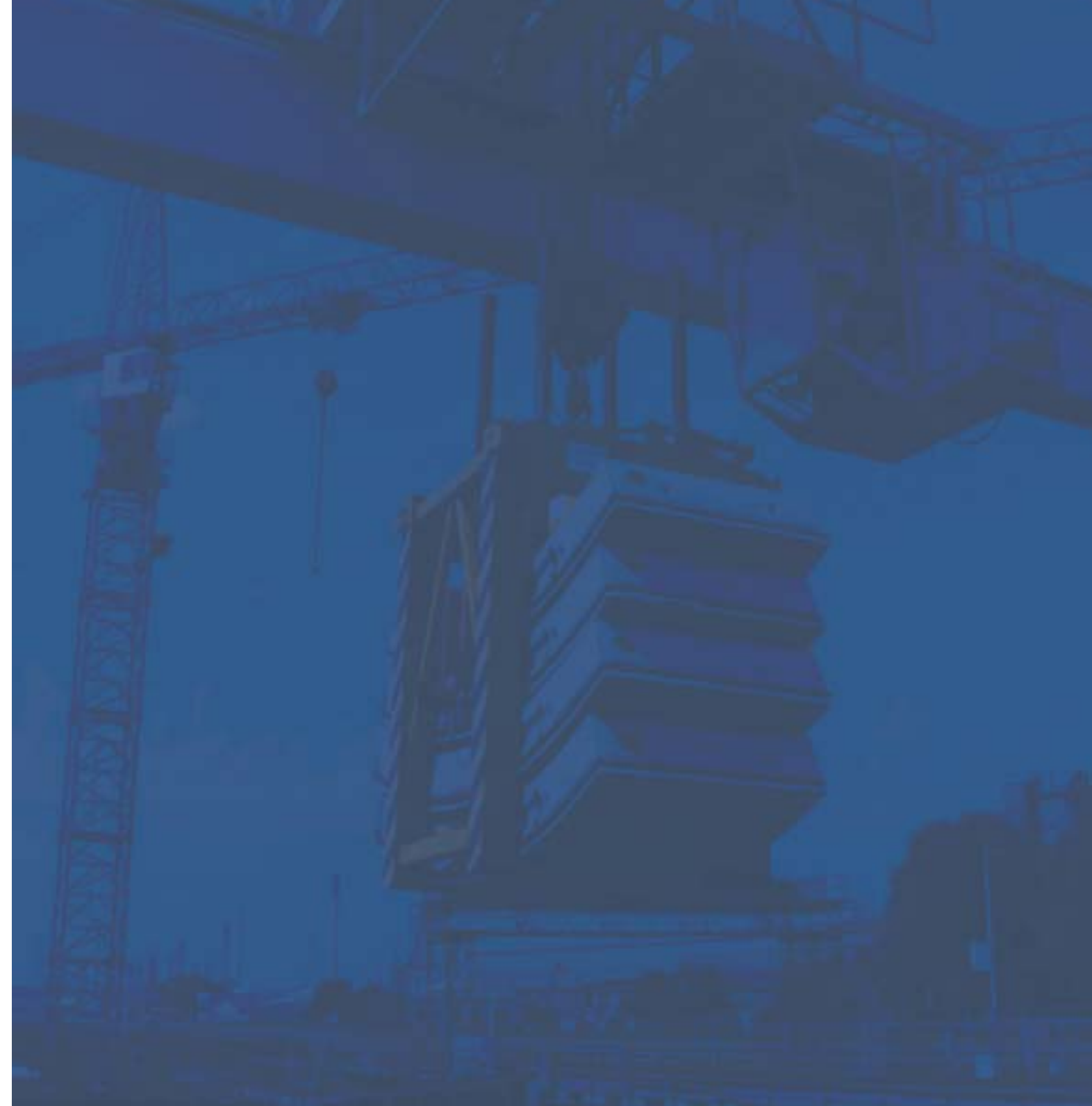
The final quality of the system expressed as the conclusion of the operational time and downtime analyses that have been carried out is especially positive in favour of the etac grout injection system.

Because the material reacts more rapidly and thus provides better support for the tunnel lining, the relationship between the etac grout injection process and the forces that play a role in the tunnel boring machine are of particular importance.

The influence of etac two-component grout on the surroundings can be called particularly favourable. The grout results in an almost ideal filling of the tail split, so that the support of the concrete lining is perfect. The rate of injection and tail split pressure are very easily managed by the automatic control system.

Conclusion:

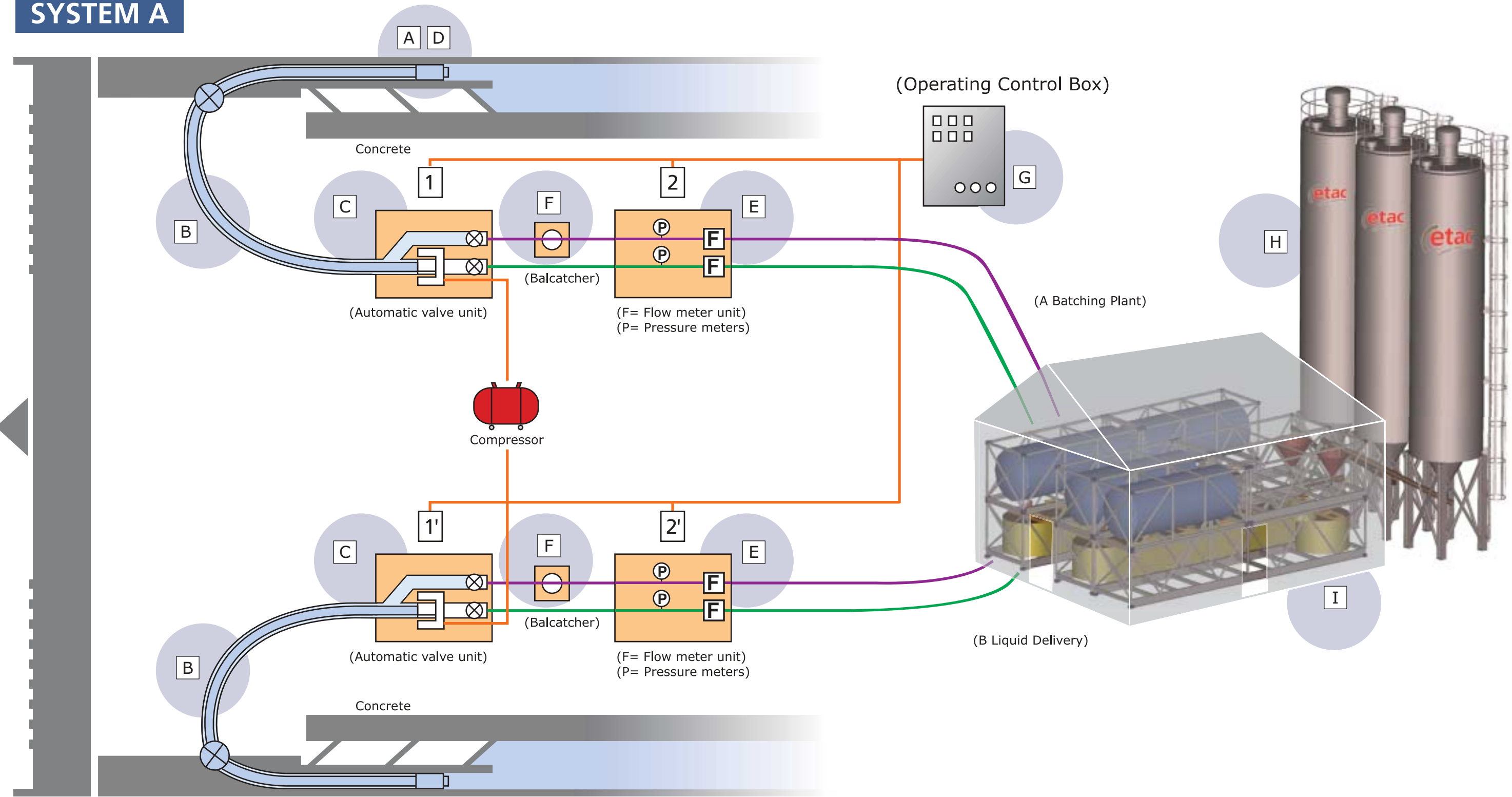
1. the grouting process results in less disturbance in the tunnel boring process
2. a reduction in damage to the tunnel lining
3. the horizontal en vertical deformation of the ground formations can be reduced to practically zero
4. a manageable tunnel boring process



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# SYSTEM A



# SYSTEM B

