

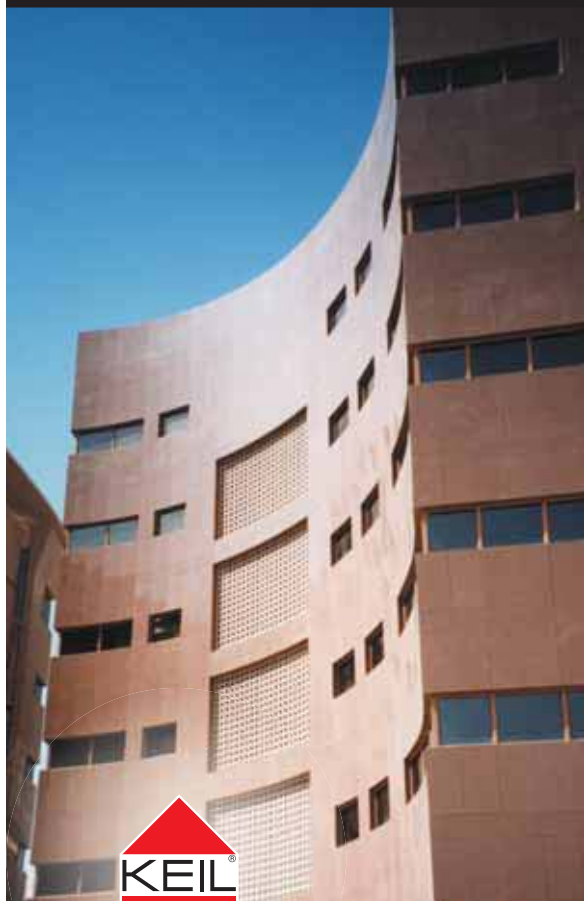
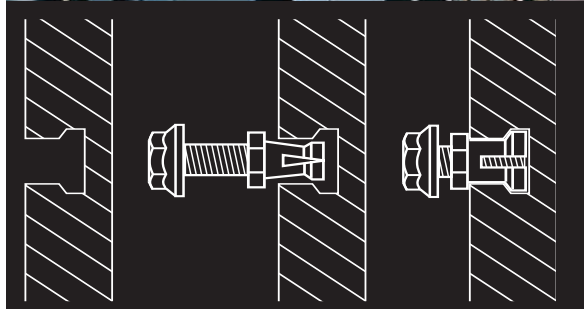
Undercut Technology

Creative facade design through
panel attachment from the rear
Innovative and economic - KEIL makes it possible



Facades with character...

from traditional to modern



- Using the innovative, but well-proven attachment system, KEIL has lowered barriers in construction technology by removing visible attachments.
- The most diverse combinations of facade materials can be used, making it possible to bestow the desired character onto a building whilst ensuring the highest technical and functional safety.
- The KEIL undercut technology considerably reduces restrictions on the selection of the ideal facade material on the basis of structural requirements – in particular for ventilated rainscreens.
- The desire to attach facade panels in an invisible manner is fulfilled quickly, easily and safely by the KEIL undercut anchor. It uses the positive fit as support mechanism for this purpose.
- A positive fit anchor fills the hole which is widened at the base. It is possible to achieve high support forces with a small hole diameter and a large undercut hole section without stressing the panel – as is the case with conventional dowels. This even applies to panels as thin as 6 mm.
- The system reduces the work involved as fewer holes are required and creates economic advantages by allowing thinner panels of expensive material to be used.

...invisible attachment

The KEIL undercut anchor makes it possible to attach facade panels to the ventilated rainscreen from the rear.

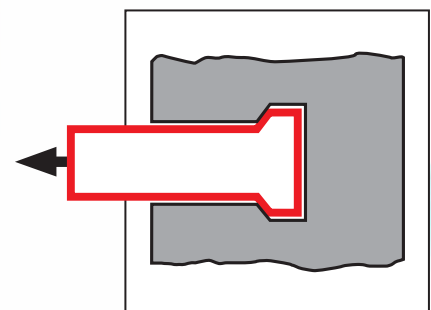
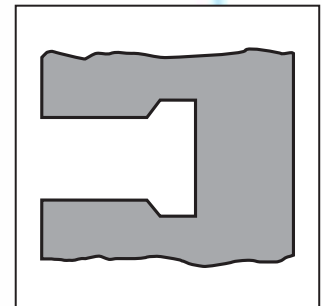
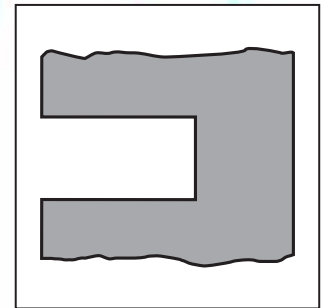
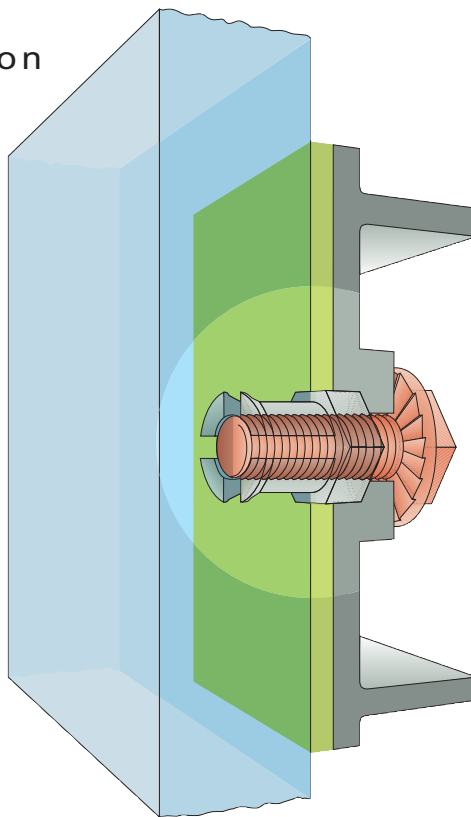
A hole which is widened at the base is drilled into the back of the panel. This is done easily and accurately using **one** tool in a **single** step with the KEIL drilling technology. The system has proven itself in all commonly used panel material.

The glass illustration demonstrates the clean, efficient, positive fit attachment to the facade panel.

Panels of any thickness or weight are given an undercut of precise and uniformly symmetrical shape. This distributes the tensile forces uniformly across the contact faces and the anchor sits in the hole free from lateral stress.

Only a one-piece anchor and a screw are required to safely attach the facade panel.

The KEIL facade anchor fits into the most diverse materials and support structures. Even attachment **without support structure** is possible.



The advantages

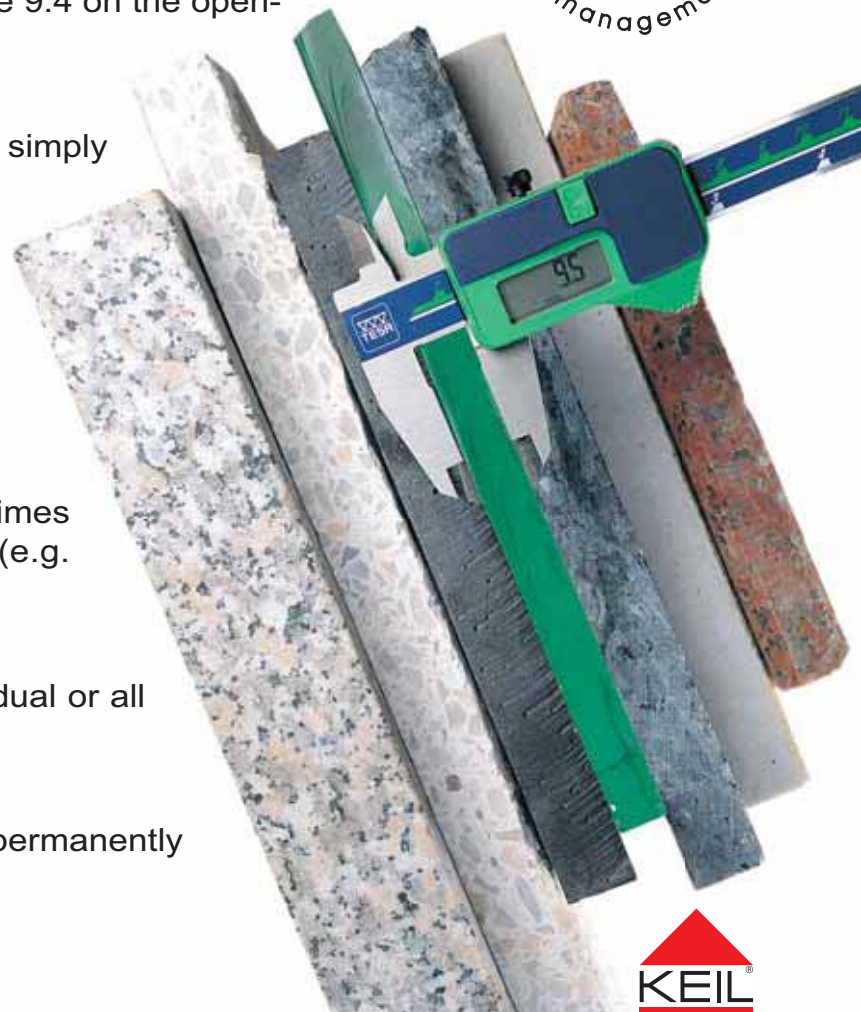
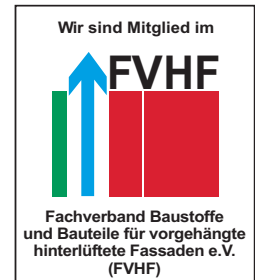
for design and aesthetics

- There are no limits to creativity. Whether elegant, traditional, modern, delicate, unconventional – even the boldest facade designs can be implemented.
- A clean facade undisturbed by visible attachment points.
- More than 50 different materials are available, e.g. ceramics/fine stoneware, natural stone, plastics/HPL, fibre cement, glass ceramics, artificial stone.
- The combination and interaction of different materials, shapes and colours is possible and help to achieve the effects planned.
- Closed or open joints without visible anchors are characteristic for high-quality facades.
- No dirt streaks as the attachment components are situated at the rear.
- Long life and low maintenance costs.
- Larger panels than for attachment at the edge for the same safety level.
- Increase in the value of the building with regard to acceptance and marketing.

The advantages

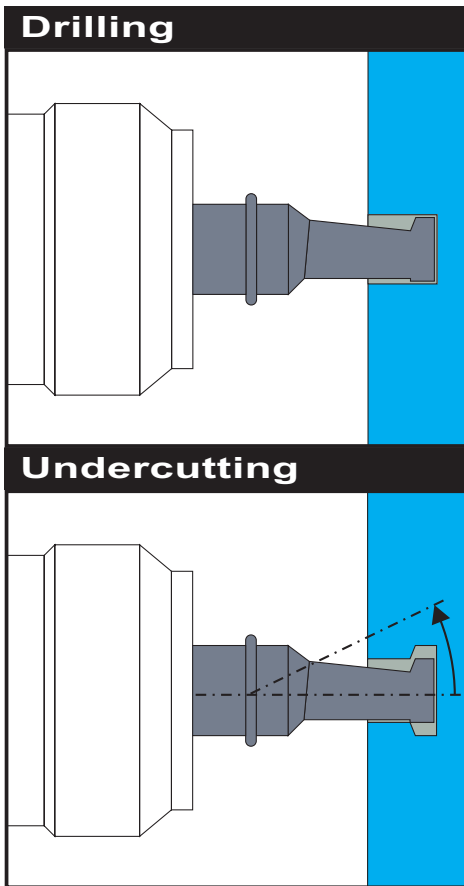
for technology and budget

- Highest safety due to various patents and approvals.
- A complete system – technically mature and proven innumerable times.
- Facade panels as thin as 6 mm – economic and saving resources.
- Installation independent of temperature and climate with a high degree of pre-assembly in the factory or on site.
- Position of undercut anchor on the back of the panel can be selected without constraints.
- Earthquake tested up to magnitude 9.4 on the open-ended Richter scale.
- Tolerances in panel thickness are simply compensated for.
- Very high support forces due to optimum load application, but without stressing the facade panel by lateral bracing.
- Breakage loads are up to seven times higher than for edge attachment (e.g. bolt anchors).
- Subsequent replacement of individual or all facade panels.
- Non-flammable, mechanical and permanently safe attachment.



The undercut anchor

quick – easy – safe

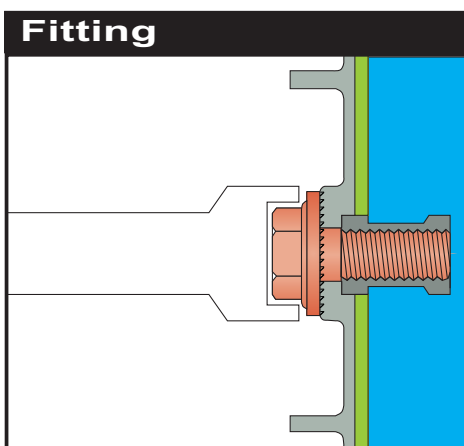
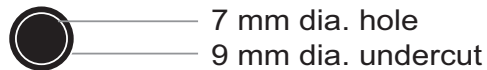


- A cylindrical hole is drilled and then conically undercut in one step with only one tool.

Different levels of automation are possible depending on machine type and material.

The drilling time in ceramics is less than 10 seconds.

Panels of any size or weight are given an undercut of precise and uniformly symmetrical shape.



- To prepare for installation, an undercut anchor is inserted into the hole and tightened to a positive fit using a screw.

Quick, simple and safe with normal tools, e.g. a rechargeable screwdriver.

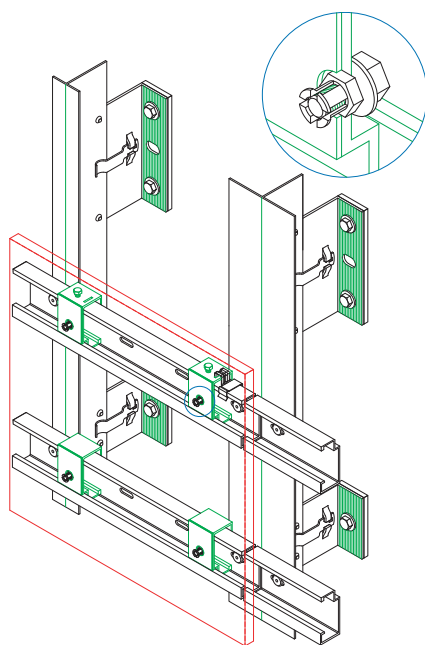
Safety and product liability require that the KEIL undercut attachment system is always used as a unit. Correct functioning is ensured only if matching KEIL products (anchor with screw or threaded pin, drill head and facade drill) are used together. Their use as a system has also been stipulated in the approvals granted and applied for. The components of the KEIL undercut attachment system are protected by patent.

The great variety of rear attachment

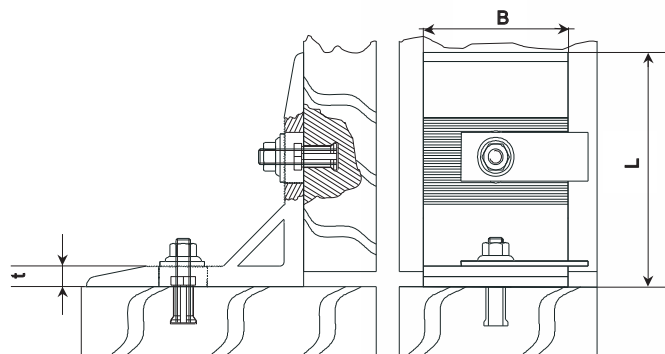
The KEIL undercut technology comprises a drill and attachment system to be used together which opens new vistas of facade design.

The tight constraints of previous attachment methods are removed.

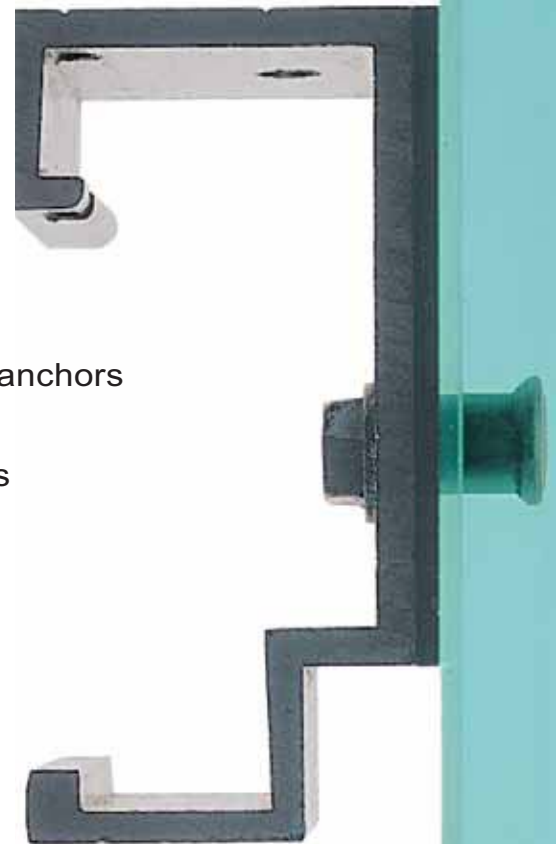
- Connection to a support structure
- Connection to a cassette structure
- Attachment of soffit panels with internal angles
- Direct attachment using fork anchors and plug-in anchors
- Attachment of countertops, furniture, grave surrounds or natural stone radiators.



Example of a support structure



Example of soffit panels with internal angle



Everything from the same source

Attachment technology – the complete set

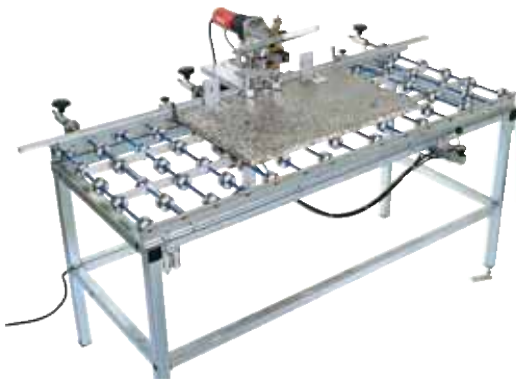


- KEIL system toolset consisting of:
 - Facade drill bits
 - Drill head
 - Undercutting Drilling Machine
 - Available as: Manual drill
 - Bench drill
 - Automatic drilling machine



- Advice for your particular attachment problems from our service team:
 - approvals for various materials and sizes with and without support structure are available. The KEIL undercut attachment system is protected by patents.

- Demonstration and training at the customer or in our works.
 - We can demonstrate the undercut system including drilling technology to you.
 - Manual drills or machines with roller tables can be demonstrated in your company.
 - We should be pleased to demonstrate the automatic drilling machines during your visit to our company or at selected distributors.



- Machine rental service without capital investment:
 - KEIL and various national and international distributors also rent the drilling machines for undercut holes with KEIL facade drill bits.
 - Use the possibilities of extending your existing machine range temporarily or to have the optimum machine available for special jobs without having to tie down capital.

- Drilling and undercutting service:
 - The drilling capacities are adapted to requirements and sufficient capacities are also available for large projects.
 - We have extensive experience in this area (the Debis building at Potsdamer Platz in Berlin, for example, was drilled at KEIL).



We reserve the right to make technical modifications.

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