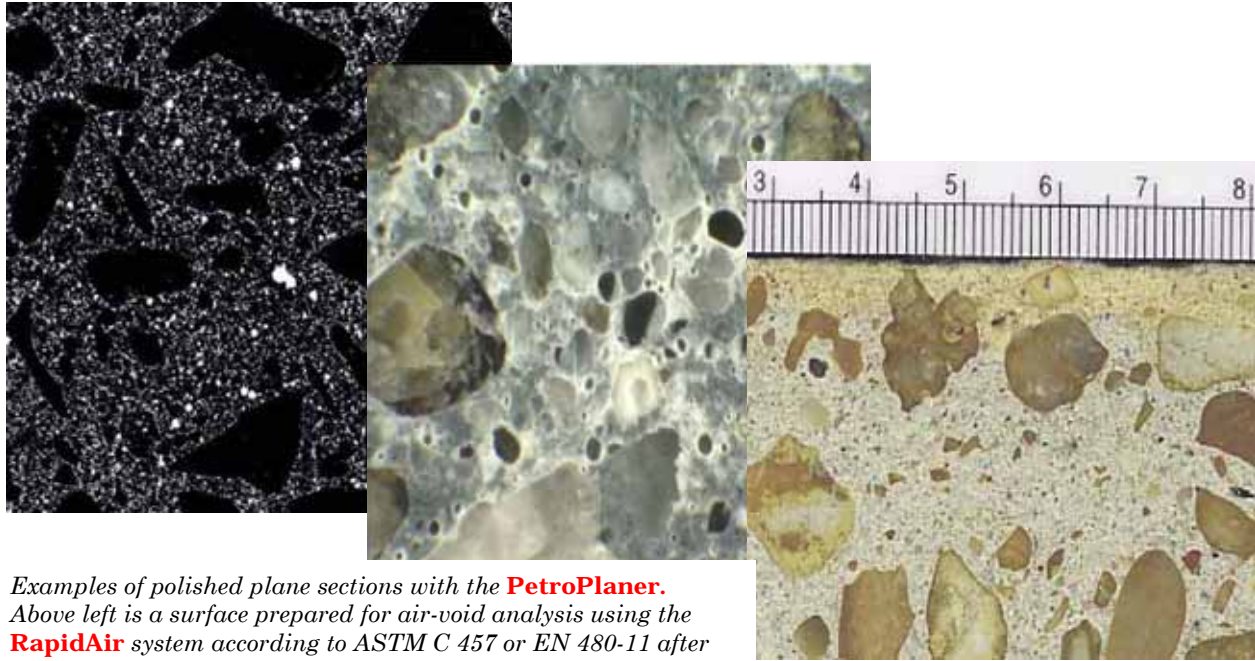


Purpose

The **PetroPlaner** is a state-of-the-art lapping and polishing machine for preparing lapped/polished plane surfaces for:

- Air Void Analysis according to ASTM C457 or EN 480-11.
- Petrographic examination of polished fluorescent epoxy impregnated surfaces
- Polishing of thin sections for SEM / EDS examination



*Examples of polished plane sections with the **PetroPlaner**. Above left is a surface prepared for air-void analysis using the **RapidAir** system according to ASTM C 457 or EN 480-11 after contrast enhancement. At center and right are examples of surfaces prepared for forensic, petrographic analysis.*

In preparing polished plane sections for microscopical air-void analysis according to ASTM C457 or EN 480-11, it is crucial that the polishing be of very high quality. Both the paste and the aggregates have to be polished to exactly the same level and no erosion of the paste has to occur. In order to measure reliably the correct chord length of each air void, it is extremely important that the individual air voids have clear and sharp edges without any degradation. Otherwise, the results of the air-void analysis will be erroneous.

Polishing of concrete specimens for air-void analysis by ASTM C457 or EN 480-11 is especially difficult if:

- The paste is weak due to low maturity, poor curing, or a high water-cement ratio
- The paste is deteriorated
- The aggregates are extremely hard, having higher resistance to abrasion than the paste
- The concrete has a high air content causing erosion of the paste between individual air voids

The **PetroPlaner** grinding system, with its different grinding slurries, maximizes the success of such grinding and polishing jobs. The procedure can be supplemented by impregnation with an acetone based hardener that is applied before each grinding step.

The grinding technique involves three rotating parts: the specimen itself, the transverse arm connecting the two specimens, and the rotating table. This novel grinding system ensures even grinding of the specimens and even wear of the grinding surfaces.

PetroPlaner

The **PetroPlaner** features:

- Optimized pressure on the specimens during grinding with the different grinding and polishing slurries
- Eccentric operation of the polishing heads ensuring totally even and uniform grinding of the surface
- Even and minimal wear of the rotating cast iron grinding plate
- Polishing of two specimens simultaneously, reducing specimen preparation time
- Built-in, self-feeding and recycling mechanism for the slurry, reducing cost of the slurries
- Simple and durable design with a low demand for maintenance and a long service life
- Compact design and low space requirements for laboratory facilities,
- Simple and easy operation
- Proven track record of 20 years with excellent results

PetroPlaner Description



The photo on the left shows the complete **PetroPlaner** unit. Shown below are details of the attachment to the two specimens and the built-in self-feeding and recycling system for the grinding slurry.

The specimens rotate eccentrically in relation to the rotating cast iron bottom plate with the grinding or polishing slurry in between. Grinding and polishing takes place using selected slurries with varying fineness of silicon carbide particles.

The typical specimens are 150 mm by 150 mm in polishing area and 40 mm in thickness.



Requirements

The **PetroPlaner** requires access to 380 VAC and to cold water. The **PetroPlaner** is supplied with different silicon carbide (Carborundum™) powders for grinding and polishing. Also required are: a diamond saw, equipment for vacuum impregnation, a fume hood, and a drying oven. *Germa***n Instruments** will provide all the necessary additional equipment upon request as well as assistance in setting up the **PetroPlaner** and technician training. We also provide courses in concrete petrography using macroscopic examination and optical microscopy.