

Both conventional and CtP technology are often used in lithography. While CtP, as a relative new way of plates making process, turns out to be a major breakthrough, due to the expenses of the shifting to this new technology and the expenses of maintenance, there are still printing houses, especially smaller ones, that rather continue to use the conventional plate making process then invest in new technology and change their well established workflow.

## 2. Technology and methods

### 2.1. Conventional and CtP plate making process

The conventional plate making process sustains mainly of two processes, exposure and developing. In difference to the CtP process, exposure is made with help of a thin plastic foil. The places on the foil which are printed on prevent the light from passing through in the exposure process. Vice versa, the spots where the foil isn't printed on allow the light to pass, which causes the diazo layer to dissolve in the developer.[4] Since this process requires the preparation and use of the foil, the number of possible errors increase[5], making the CtP process the number one choice for many printing houses.

CtP stands for Computer to Plate, indicating a technology that relies almost entirely on a computer. Once the preflight check has been made by authorized personnel, all is done automatically. The computer first exposes the printing plate in the platesetter unit. This is usually done by means of a laser beam, the most expensive and delicate part of the CtP system. As a result, this type of technology is more expensive and requires more maintenance. After the exposition process, the plate is often automatically carried onto the developing unit, which takes the plate through the developing process, afterwards laying the plate down to dry. The result is a high quality printing plate, and since the whole process is automatic, the process of making four printing plates can take no longer than half an hour[1], giving this technology a great advantage over the conventional process.

### Measuring units

To determine physical-chemical properties of the nonprinting areas on samples a measurement of the contact angle between prepared samples and commercial fountain solution.[6] Measurement was performed by Dataphysics' OCA 30 goniometer. This type of modern measuring units enables great precision of the measurement. In [figure 1](#) one can see the measuring unit and in [figure 2](#) final step of the measurement.

[Figure 2](#) shows the end point of measurement, calculation of contact angle in defined time after first fluid-solid contact. The calculation of contact angle is made by defining the paths of solid and fluid and then software automatically calculates contact angle.

### 2.3. Sample preparation

Plate samples used for this research were conventional offset printing plate coated with diazo positive photoactive layer. Exposure of all samples was made Plural EXPO74 exposure unit, equipped with metal-halide lamp. First step was to define optimal exposure and developing time, which was made with Agfa-Gevaert control wedge. After exposure, all samples were developed in alkaline solution, sodium base of molar concentration 0.2 moldm<sup>-3</sup>. CtP plate samples were type of positive thermal plate, suitable for exposure with laser beam, which radiates wavelength of 830 nm.

The developing process was conducted manually in strictly defined conditions. All samples were