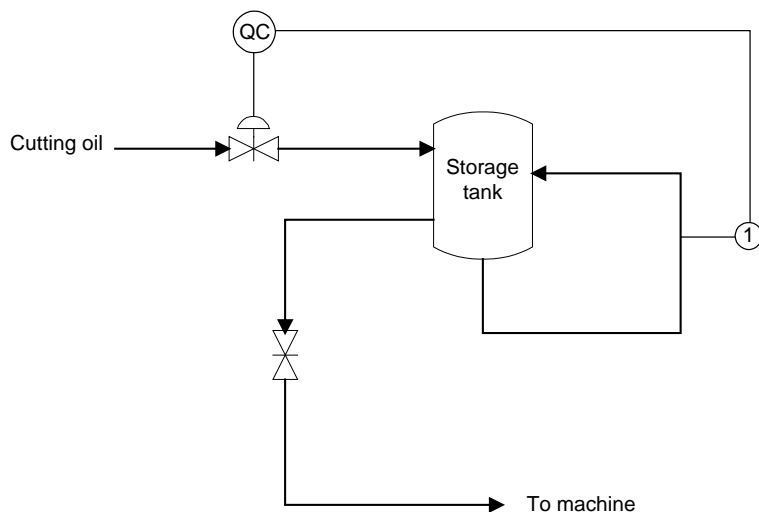


### Cutting Oils



Positions where K-Patents PR-01-S is used:

- ① Cutting oil concentration control

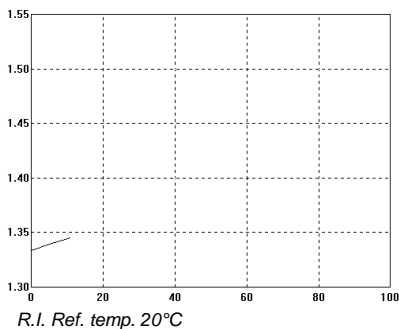
### Cutting Oils

Soluble in water

**Typical end products**

Cooling lubricants in steel and aluminium processing, can making etc.

Chemical curve: R.I. per Conc% b.w.



Steel, aluminium and can makers are manufacturing or processing ferrous and non-ferrous metals which are needed to be extended or cooled by using a rolling or coolant lubricating oil. The types of metalworking fluids are cutting oils, emulsions and synthetic fluids.

A cutting oil is an oil which contains mineral oil and/or fatty oils which are used straight or compounded. Mineral oils are petroleum products, fatty oils are derived from either animal or vegetable sources.

Soluble oils, emulsions, are concentrate mixtures of mineral oil and emulsifier, which makes the concentrate water soluble.

Synthetic fluids do not contain any mineral oil in their concentrates and form soluble fluid with water. There are two general types of synthetic fluids, chemical solutions and emulsifiable synthetic.

The control of lubricant oil concentration is important to ensure good quality for stamped parts. If there is an over-use of oils, the fat has to be removed by using chemicals. If there is a lack of the lubricant because of the misoperation of oil, the product can be damaged.

The concentration measurement has to work in very harsh conditions because of vibration and noise. Furthermore oils contain several kinds of metal particles and bubbles.

### Installation

K-Patents Process Refractometer PR-01-S is used to keep the concentration at the same level before lubricant oil is sprayed onto the surface of the stamping tool and the steel sheet.

Typical measurement range of lubricant oil is 0-15 % and the process temperature about 60°C (140°F).

### Introduction

### Application