



Seals for Increased Production

This project involved hydraulic presses in a production environment, which were working, but the customer wanted to improve efficiency. The single acting seals being used were not leaking or causing any sealing issues; under pressure the rams were in production mode, when pressure was off, the ram retracted to its start position under its own weight, which was taking time. It was noticed that on recently refurbished cylinders, the time it was taking to retract was longer, and took time to improve as the seals bedded in. Our customer wanted to know if the retraction time could be reduced.

ASSESSMENT

A time and motion study highlighted that if the retraction time could be improved, production would be increased. The equipment the rams were fitted to was already in place, so changing the design of the rams would be too costly. There were a number of sites with the same machinery and cylinders, so any changes were seen as a non starter. Because of this, the cylinder arrangement had to be kept the same. M Seals was asked if an alternative sealing arrangement, which would retrofit to current seal housings, could be offered. The seals would need to perform in the same way as current ones, working at the same pressure and housing dimensions.

SOLUTION

After a site visit to look at the cylinder arrangements, measure the metalwork and discuss what was needed, the application engineer proposed an alternative sealing arrangement to replace the current seal, which in this instance was an unsplit three piece rubber fabric chevron. It was decided to go with a single acting U-seal in a self lubricating material, which would be locked into an acetal header. The seal would be manufactured to a symmetrical U-seal design with a tight tolerance to the back heals of the seal in the retaining (OD) and face seal (ID) dimensions, keeping the seal as concentric as possible within the acetal.

RESULT

A test seal was supplied for trials; on its first stroke, it retracted quicker than the current seal even after the original seal had bedded in. A number of further tests were completed, which the seals passed, and more seals were fitted into the rest of the cylinders requiring refurbishment. These seals are now in the process of being fitted into other sites around the UK.

The end customer has seen an increase in production which has built a stronger working relationship with the cylinder refurbisher.