



## Worksheet FB2 & Training Record Importance of Fluid Cleanliness

## Fluid Contamination

Email:

Course:

Provider:

Expected Outcomes: (60-120mins)

To appreciate that fluid cleanliness is vital for reliable operation.

To understand how fluid contaminants enter the system and the strategies to remove them.

Previous Knowledge Required:

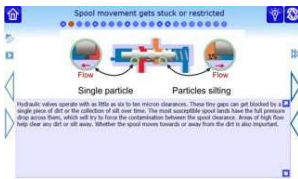
Students should have completed worksheet IH1 'Introduction to hydraulics' or have a basic understanding of what hydraulics is used for and which components are employed.

Certificate of Achievement:



Click the email button (shown left, that will appear within each app) to post your results, once the training module has been completed. Enter your email, or the email for your external training provider, to include your work in the certificate process.

*Interactive tutorial*



Complete the 'Importance of contamination control' tutorial at [www.e4training.com/hydraulic\\_courses/microtutor1.php?wtcontam](http://www.e4training.com/hydraulic_courses/microtutor1.php?wtcontam) (or via the phone app or CD/download) Complete quick quiz at end and post results.

Date, score & time:

Tick when posted

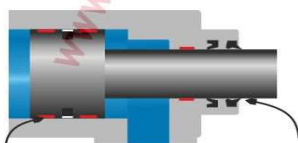
*Coursework investigations*



**Dirt enters via new fluid and air breather**



**Contact creates debris**



Debris enters on rod  
Side-loads cause wear  
**Dirt enters via cylinder rods and metal contact**

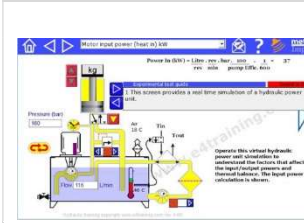
Study the 'Fluid Contamination Control' training [www.e4training.com/hyd\\_princip/contam1.php](http://www.e4training.com/hyd_princip/contam1.php) and [contam2.php](http://www.e4training.com/hyd_princip/contam2.php) (or via the phone app, CD, or download)

- Understand the consequences of dirt in the fluid.
- Understand where contaminants come from.
- Learn how to control and remove contaminants.

Complete



## Virtual test rig experiments



Experiment with the 'contamination flow' simulation at [www.e4training.com/hyd\\_princip/contam3.php](http://www.e4training.com/hyd_princip/contam3.php)

- Select drop down menu 6, 'Contamination control'.
- Operate the cylinder to observe the dirt generation and movement.
- Increase the offline cooler flow to remove the contaminants.

Tick when posted

## Coursework assignments

### Beware!

Damaging fluid.  
Exceeding performance limits  
Dirty environments  
Internal reservoir corrosion  
Leaks or internal air pockets  
Poor maintenance procedures  
Poor equipment storage

Study a hydraulic system in your company or use the design project example:

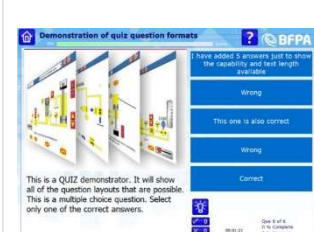
- Write down all of the sources of contamination. Consider all environmental, duty cycle, component selection, and housekeeping procedures, etc.
- Measure the current level of contamination in the fluid.
- Suggest ways the fluid cleanliness might be improved and potential reliability improvements.

Coursework submission

Submit written report.

Tick when posted

## Interactive quiz



Complete the 'Intermediate hydraulic quiz questions' at [www.e4training.com/hydraulic\\_test2.php?Quiz - Intermediate Hydraulics](http://www.e4training.com/hydraulic_test2.php?Quiz - Intermediate Hydraulics)

(or via the phone app, CD or download)  
Post result when complete.

Quiz name, date, score

Tick when posted

### And Finally:

Complete this worksheet and keep for your records. Submit the written coursework to e4training.com or your training course provider. Application result postings will be collated automatically by the course provider; e4training.com will also receive a copy of the results to include in the certificate assessment process.

### Related Worksheets:

Visit [www.e4training.com/hydraulic\\_courses/](http://www.e4training.com/hydraulic_courses/) to find the next worksheets related to your course.