

Contaminants in lubricating oil and fuel contribute to component wear.

Extensive research shows typically, oil and fuel cleanliness delivered “new” is unacceptable to machine longevity. Cleanliness is determined by counting the amount and size of particles in your fluid. The ISO Solid Contaminant Code ISO 4406 is the single most widespread system for representing contaminant particle levels.

Contaminants in your fluid generate wear and if not removed will have a severe impact on component life. Correct filtration is important to maintain targeted cleanliness levels.

The **BRITISH HYDROMECHANICS RESEARCH ASSOCIATION (BHRA)** has conducted a 3 year case study in order to determine the correlation between fluid cleanliness and breakdown frequency. This involved a controlled “field” study of 117 hydraulic machines including:

- Injection moulding machines
- Machine tools
- Materials handling
- Mobile equipment, eg, earth moving
- Marine hydraulics



Ave ISO Code	Ave Hours Between Breakdowns	Relative Life Factor
24/21	2 00	0.19
23/20	2 50	0.24
22/19	3 25	0.31
21/18	4 30	0.41
20/17	6 00	0.57
19/16	8 00	0.76
18/15	1, 050	1 (arbitrary base)
17/14	1, 400	1.33
16/13	1, 900	1.81
15/12	2, 600	2.48
14/11	2, 600	3.62
13/10	5, 000	4.76
12/9	6, 500	6.19
11/8	9, 000	8.57
10/7	20,000	19.05

The study results (above) allow the user of hydraulic equipment to quantify cost benefits of machine cleanliness.

For example, by shifting the contamination level from ISO code 22/19 to 14/11 a tenfold saving can be achieved in machine failure costs.