

DETAILS OF INTERESTING CLAIM

No:

Type of Insurance:

(use code)

M

Description of damaged item:

Cracked rotor spindle of generator in bulb-type water power plant

Cause of Loss:

(use code)

(3) +(2)-Faulty design and workmanship

Claim Cost (100%)

(Net of deductible or time excess)

US\$ 1 Mio.

Description of Incident and Loss Prevention measures initiated:

During the one year warranty inspection, fretting was found on the spindle of the generator rotor. The place where it was first observed was not a major structural weld but only a ventilation cover weld. Closer examining using non-destructive testing disclosed the spindle to contain cracks through the entire major structure in several locations.

It was obvious that the entire spindle had to be replaced but before that the cause for the cracking had to be found. The construction was of a normal type, except for the fact that this unit had been somewhat shortened, leading to a much more critical spindle design than before. The FEM-calculations showed considerable stress concentrations at the major structural welds and the design was altered for the new spindle.

While searching for the root cause of the damage, it was also found that some of the less critical welds had serious weld defects. The reason for this, was found to be welding made on improperly cleaned (painted) surfaces and the lack of non-destructive testing of these secondary, less load-bearing welds. When secondary welds are connected to the main load-bearing structures, these welds have to be inspected according to requirements adopted for the main structures.

After redesigning the spindle and after testing all the welds using stringent acceptance criteria for weld defects, this kind of damage is unlikely to appear again.

Outline the interesting or unusual aspects of this claim or problems experienced during settlement:

Excess fretting on welded structures should always be investigated thoroughly. If the structure produces fretting oxide, this can be a sign for that the stiffness of the structure might be too low which in turn can be caused by damage of a structural load-bearing component in the machinery.

When welding secondary less load-bearing welds to any major structural component in any

machinery, stringent testing requirements should be applied also to the secondary welds.

CODES

1. Type of Insurance

M Machinery Breakdown

BE Boiler Explosion

LP(M) M - Loss of Profits

ALOP (DSU) Advance Loss of Profits

EAR Erection All Risks

CAR Contractors All Risks (Civil)

G Guarantee

EE Electronic Equipment

O Other Classes

2. Cause of Loss

(1) Faulty operation

(2) Faulty material or workmanship

(3) Faulty design

(4) Fire

(5) Explosion

(6) Storm

(7) Flood and Inundation

(8) Earthquake

(9) Other causes