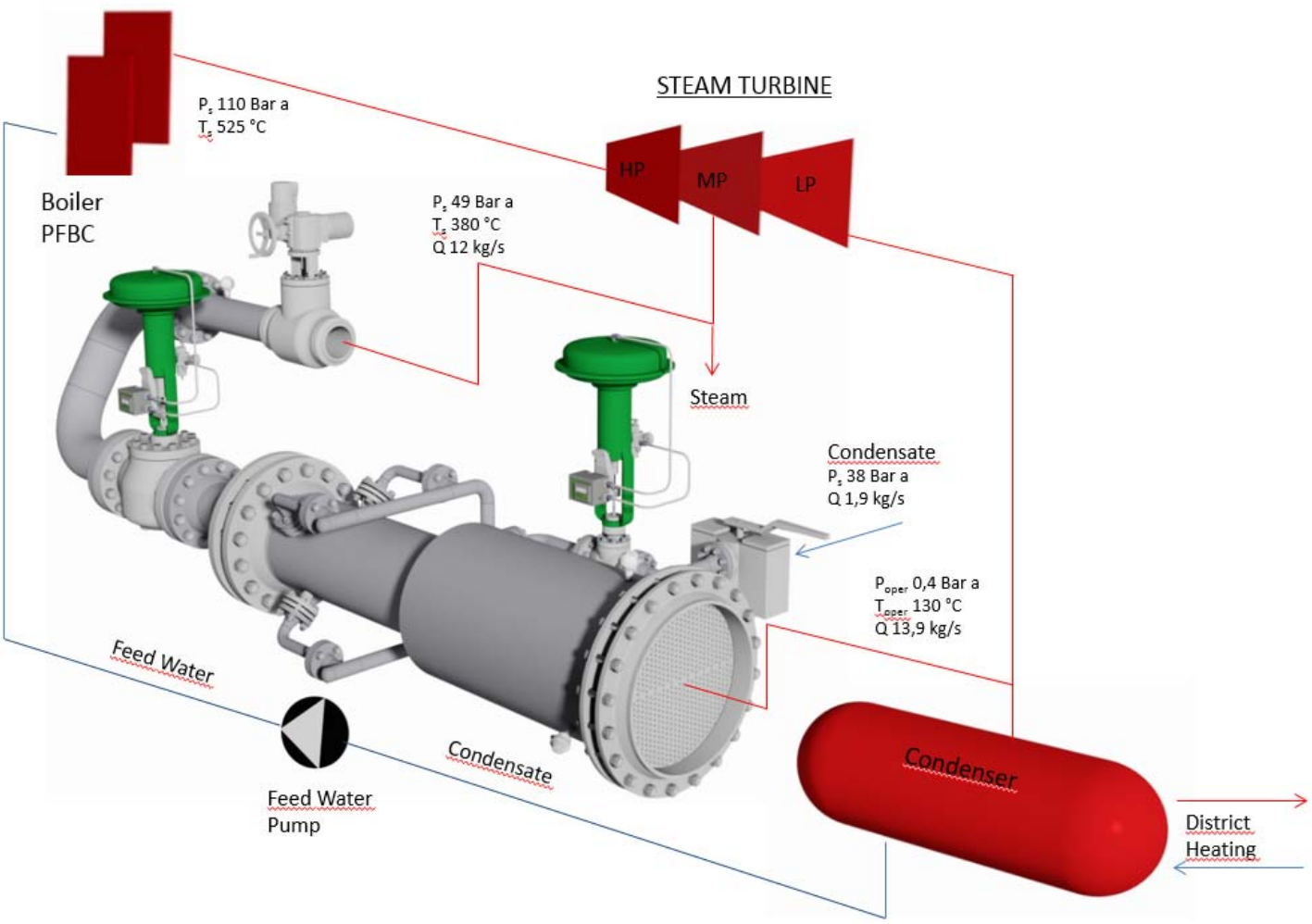

Askalon solve problem with damaged steam turbine

During revision in summer 2014 cracks were found in intermediate pressure part of steam turbine. New rotor not available in short time.

Due to the fact that PFBC boilers have an operating range between 90 and 100% load three alternatives were found in order to continue operation.

1. Only one boiler in operation which caused reduced capacity of district heating supply.
2. Two boilers in operation using steam dump valves giving high environmental costs.
3. Extract steam from turbine in order to have normal operating conditions for low pressure stage.

Alternative three is most favorable because it will not restrict district heating supply. Problem is to have extraction connection and knowledge about amount of steam flow dumped to condensor.

It was found that steam turbine had an extraction connection upstream of damaged intermediate part. Calculations showed that 12 kg/s had to be dumped to condenser. Due to the short time frame it was not possible to make controlled extraction. By reducing pressure in five stages and desuperheating with condensate steam turbine low pressure stage could have same operating conditions as before. Extraction dump is used during all season without noise or vibration problems. Year after capacity was increased to 18kg/s and control valves installed.

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