

Dizzy vibrations at a briquette plant in Russia

After the installation of a briquette plant in Russia strong vibrations occurred under certain operating conditions within the 100 m high tower constructed like a platform. Within the tower the reactor as centre as well as the heater with different burners and vibration slides were installed. The staff assessed the occurring vibrations as so dangerous that they refused to enter the working affected sectors. Stiffening of different cross construction of the steel frame was not successful, so KÖTTER Consulting Engineers was asked to analyse the cause.

By means of different metrological investigations on-site, the possibilities for the origin of the vibrations were analysed. However, the cause of the increased vibrations was not in the vibration slides installed in the tower - as the operator assumed - but an acoustic resonance in the reduction gas pipeline. Within the 28"-pipeline to the heater increased pressure pulsations at the mechanic connection points (as e. g. pipe elbow) converted into mechanic vibrations.

Among different proposed solutions the installation of 2 pulsation-damping-plates according to the "KÖTTER-principle" (diameter 700 mm) in direction of the circular pipeline was selected and implemented. The acoustic resonance could be successfully eliminated. Since then, the plant can operate without vibrations and the staff feels safe in all working areas.

FLUID MECHANICS



Overview of the briquette plant



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