"The Boiler Makers"

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1 Content

In a small factory of the 18th century, there's a lot going on. Fire is burning to heat the water in a boiler. Steam is exhausted through several valves and leaks of the piston chamber. Particles of hot glowing metal are hurtling through the environment which is sparsely illuminated by several light bulbs.

2 Effekts und details

Implemented

- Kinematic animation: Steam engine in action
- Bump mapping especially on rusty metal and wooden surfaces [1,4]
- Shading (Phong) [6]
- Shading - Ambient occlusion (offline) [2]
- Shadowing and self-shadowing, dynamic illumination caused by flickering light bulb [3,5]
- Steam exhausted by the engine [8]
- Particle system simulating the effect of sparks produced by the hammer falling on the ambos [8]
- Screen space effect - blur of light bulbs

Future work

- Refraction mapping of water in the compensation tank for the boiler [9]
- Motion blur of fast moving devices such as the falling hammer, the spinning fly wheel and regulator [7]
- Fire beneath the boiler and smoke produces by it: Rendering smoke and fire in real-time
- Detail maps simulating dirt and dust, especially on upper surfaces

Literatur

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[7] Gilberto Rosado and Rainbow Studios. Motion blur as a post-processing effect. *GPU Gems 3*, 2007.

[8] J. Van der Burg. Building an advanced particle system. *Game Developer Magazine*, 3, 2000.

[9] Alex Vlachos and Jason L. Mitchel. Refraction mapping for liquids in containers. *Game Programming Gems*, 2000.