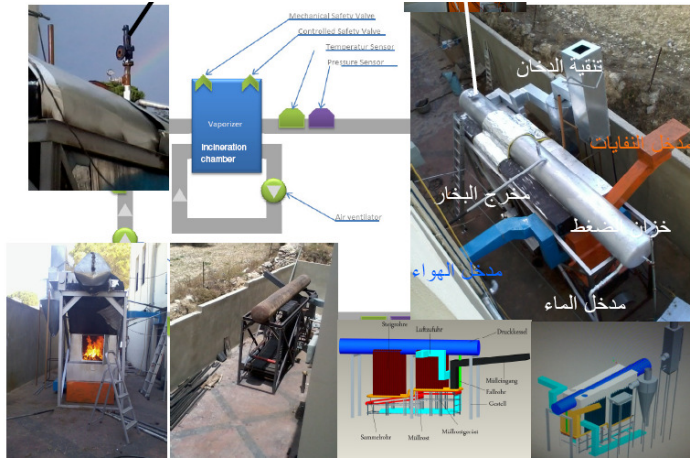




Ras Nhache/Batroun - Tripoli, 11th Jan 2015

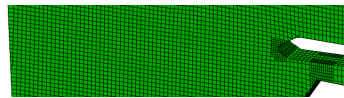
TEMO-IPP Incineration Demonstration Plant Ras Nhache/Batroun, Lebanon



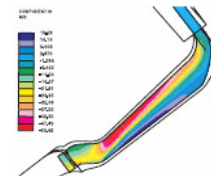
Upscaled vaporizer train element (TEMO-IPP has to be upscaled in such a way) (picture is from Dr.-Ing. M. Franz, "Dampferzeuger", www.axpoholz.ch/Dampferzeuger.pdf)

Vaporizer of TEMO-IPP incineration demonstration plant at Ras Nhache/Batroun

CFD Analysis step 1: Upscaling CAD Model of vaporizer (to be done by student working on Master Thesis *Mechanical Analysis of an upscaled version of the Vaporizer (pressure vessel and circulation tubes) of the incineration pilot power plant TEMO-IPP*)



CFD Analysis step 2: Grid generation



CFD Analysis step 3: Calculated water/steam flow

Master Thesis

Computational Fluid Dynamics (CFD) Analysis for Water/Steam flow in an upscaled version of the vaporizer of incineration power plant TEMO-IPP

To be able to upscale the TEMO-IPP incineration plant to a commercial incineration plant (about 40 MW) in Tripoli or elsewhere in North Lebanon critical components shall be verified by Computational Fluid Dynamics with the tool Abaqus. The main critical component is the pressure vessel with about 100 bar pressure difference. Working packages:

1. CAD Modeling	2. Mesh Generation	3. Solver	4. Visualization	5. Documentation
Upscaling CAD Model with ProE (to be done by other student –see above)	A mesh generation C++ code shall be taken from the open source code OpenFoam and migrated to TEMO_IPP-CFD tool.	A finite difference and a finite volume C++ code shall be taken from the open source code OpenFoam and migrated to TEMO_IPP-CFD tool.	Shall be done with the tool Paraview	
	4 weeks	6 weeks	4 weeks	3 weeks

Keywords: Alternative Energy, Steam Generation in power plant, Computational Fluid Dynamics (CFD), OpenFoam, C++