

Hylow Publishable Summary - Figures



Project Logo

Work Package 2



a. HPW with a diameter of 800 mm

b. HPM with a diameter of 1200 mm

Fig. 2.1: Hydrostatic Pressure Converters

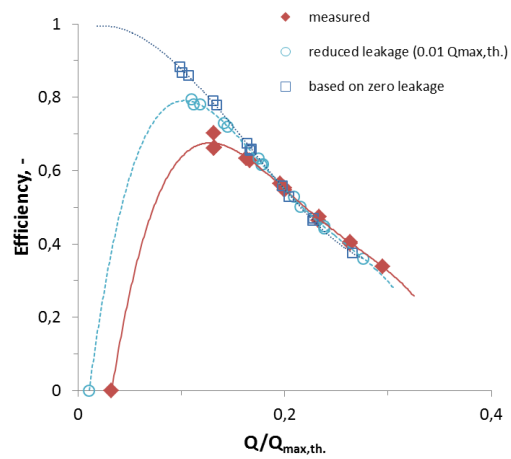


Fig. 2.2: Performance curves of HPM in flume (D = 1200 mm)

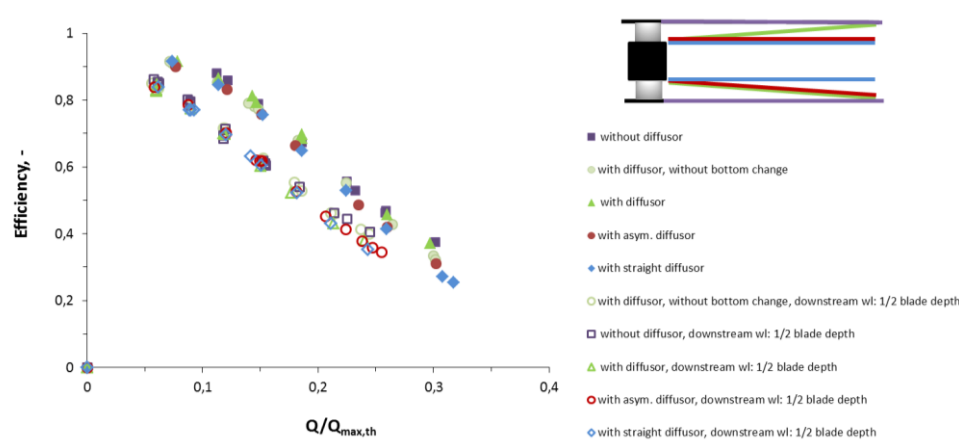


Fig. 2.3: Performance curves for different downstream water levels and different diffusors

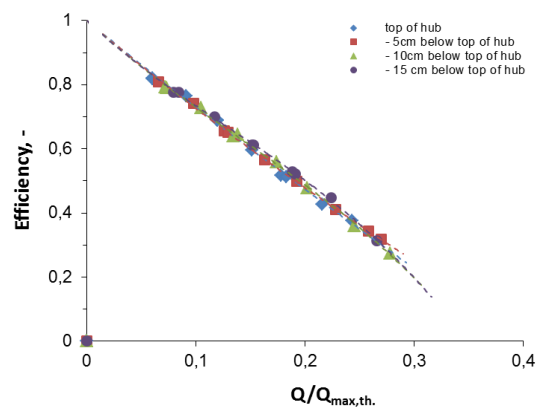
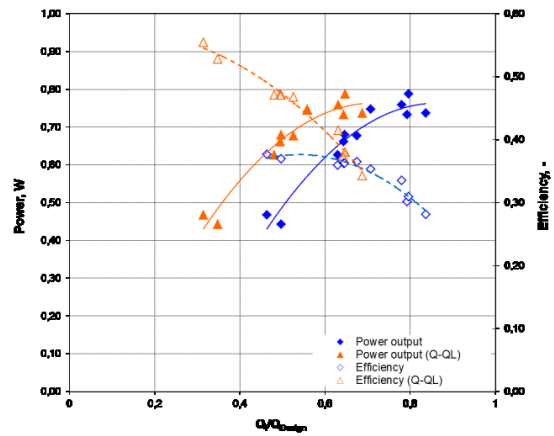


Fig. 2.4: Performance curves for different upstream water levels



a. HPM installation (view from downstream)



b. Performance curves

Fig. 2.5: HPM in 3D physical model (1:15)

Work Package 2a

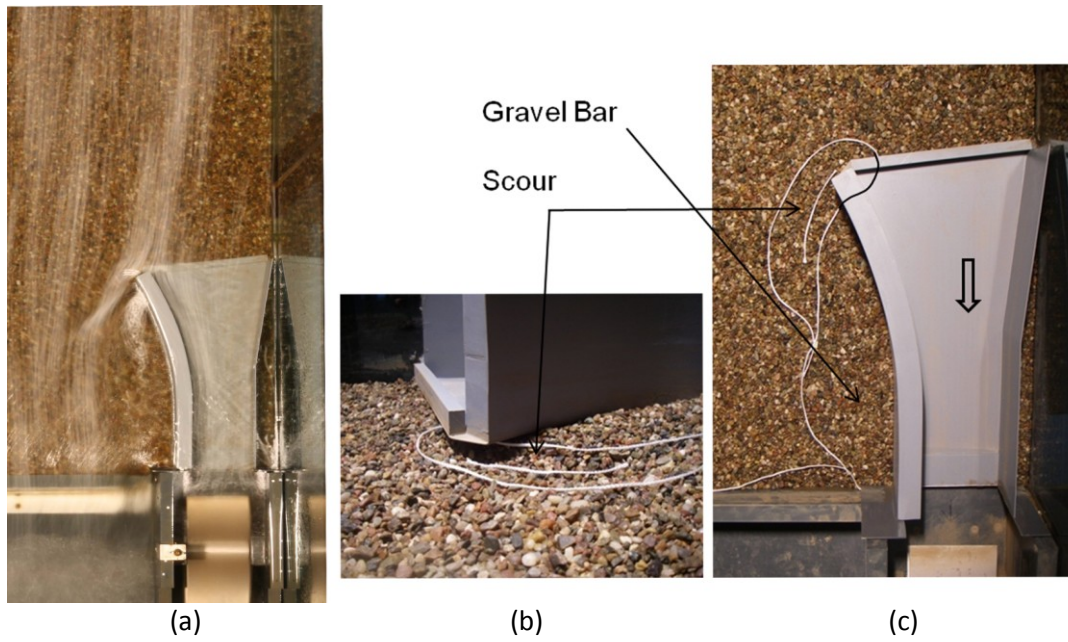


Figure 2a.1: Streamline visualization and bed topography due to an inlet structure.

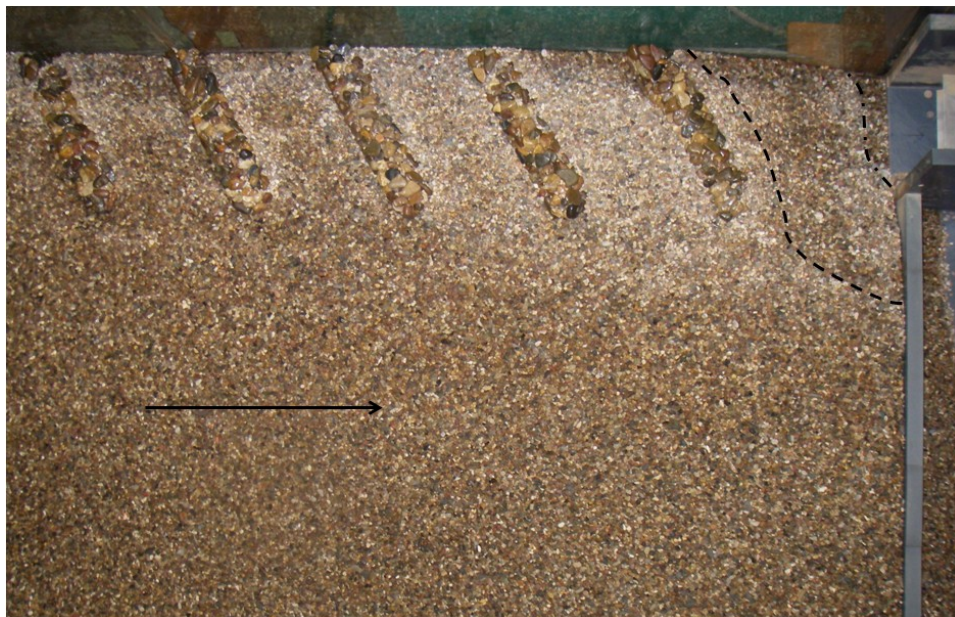


Figure 2a.2: Contour lines of the scour upstream of the HPM in case of sediment guidance structures.

Work Package 3

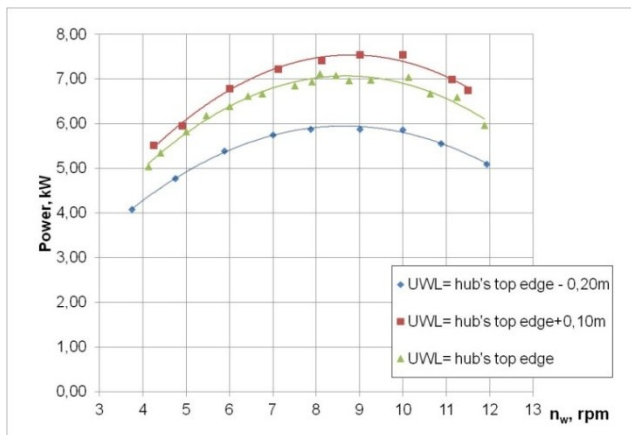


a) Upstream view of the HPM

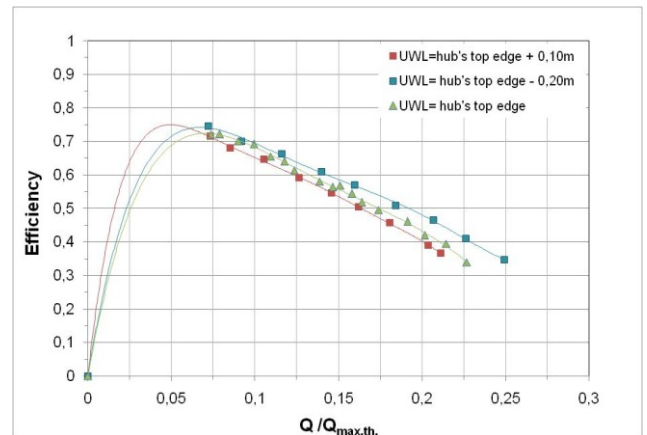


b) Downstream view of the HPM

Fig. 3.1 HPM in operation



a) Power output of the HPM



b) Mech. efficiency of the HPM

Fig. 3.2 HPM performance curves for different UWL

Work Package 5

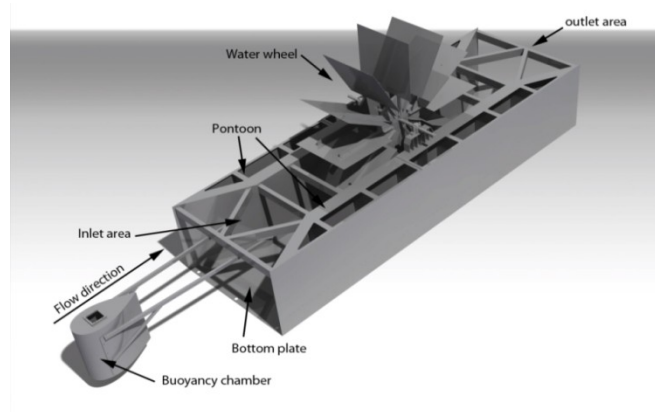


Fig. 5.1: The modelled LSM in CATIA V5

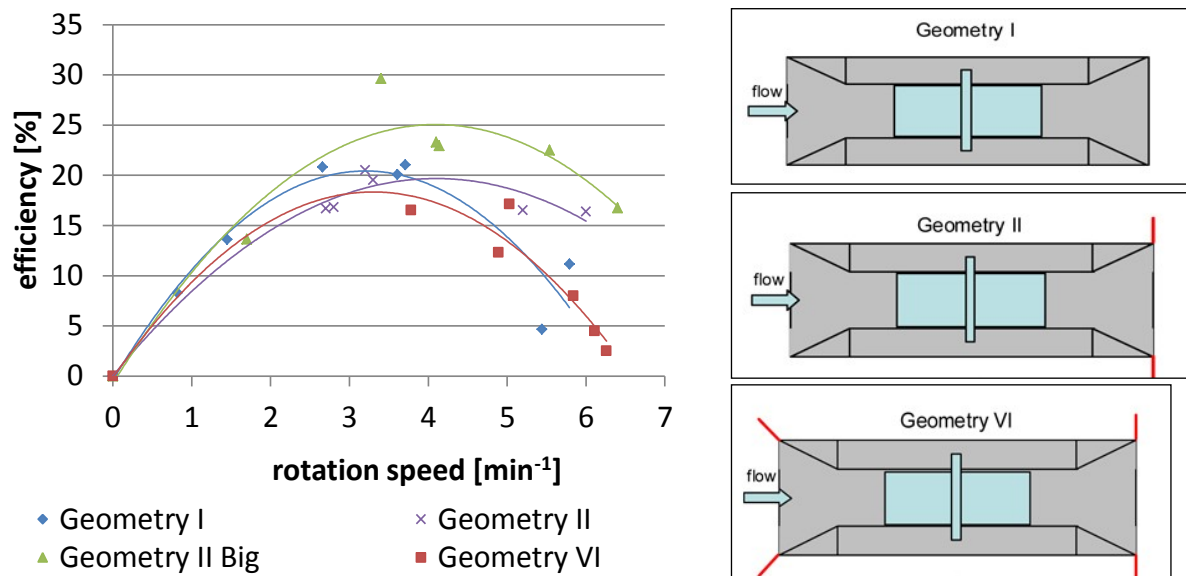


Fig. 5.2: Power output of selected geometries for towing velocity of 1 m/s



Fig. 5.3: Free Stream Energy Converter in the Warnow River

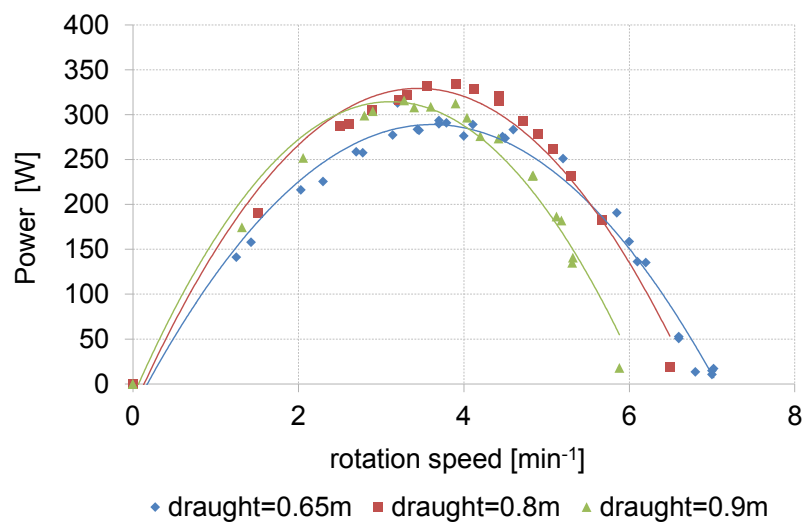


Fig. 5.4 Performance tests in the River Warnow / Northern Germany, measured power output for different draughts

Work Package 7



Figure 7.1 - DC permanent-magnet machines

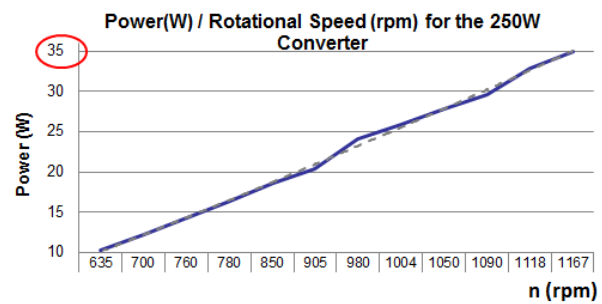


Figure 7.2 - Power (W)/Rotational speed (rpm) for the 250 W converter

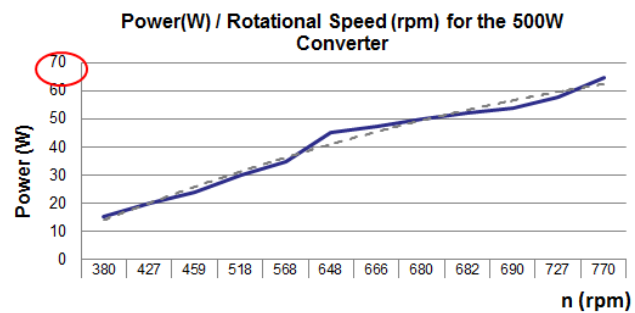


Figure 7.3 - Power/Rotational speed (rpm) for the 500 W converter



Figure 7.4 - Mafra Water Supply System

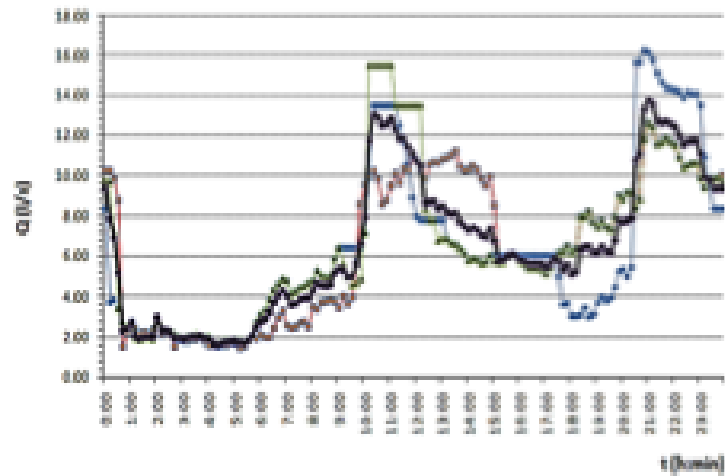


Figure 7.5 – Discharge variation

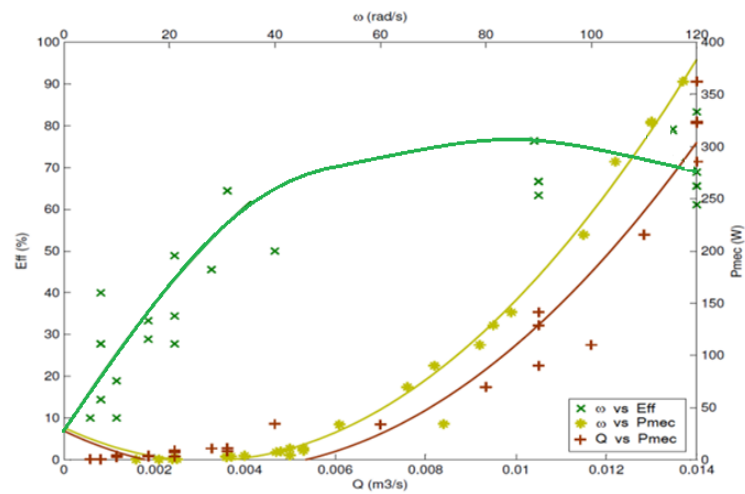


Figure 7.6 – Power variation

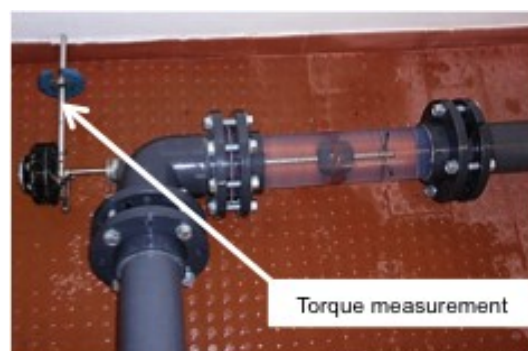


Figure 7.7 - Torque measuring testing

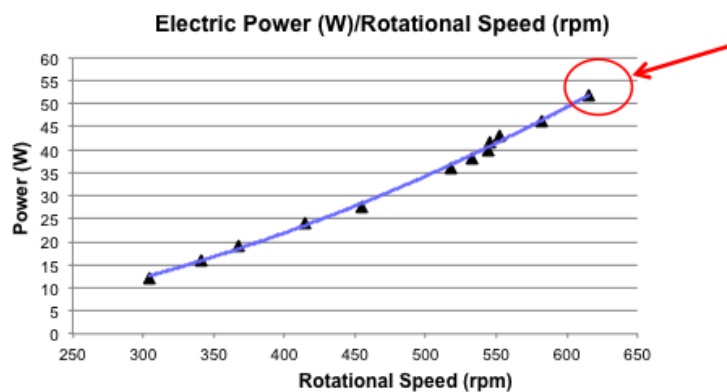
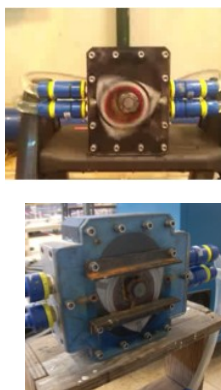


Figure 7.8 – PDT last iterations / Power

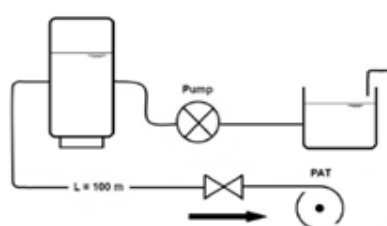


Figure 7. 1 - PAT system characteristics

Parameter	Value
Operation Frequency (Hz)	50
Nominal Voltage (V)	230/400
Rated Power(W)	550
Power Factor	0.74
Maximum current supported	2,8



Figure 7. 20 - Asynchronous generator characteristics



PAT Experimental setup

Figure 7. 31 - Laboratorial system

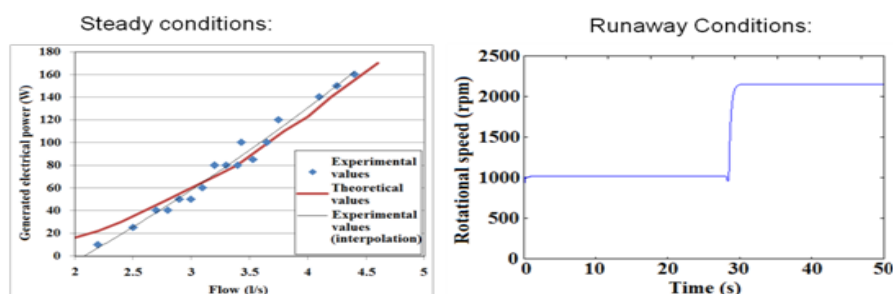


Figure 7. 42 - Tested steady and runaway conditions



5 - PAT testing outside

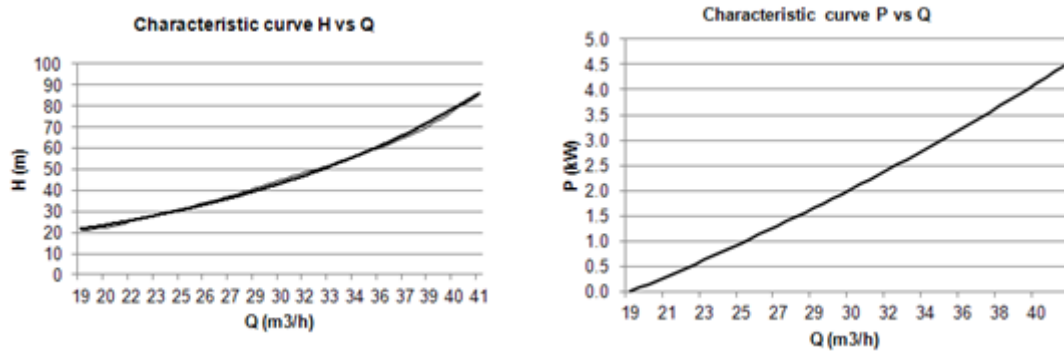


Figure 7.14- PAT characteristic curves obtained Outdoor

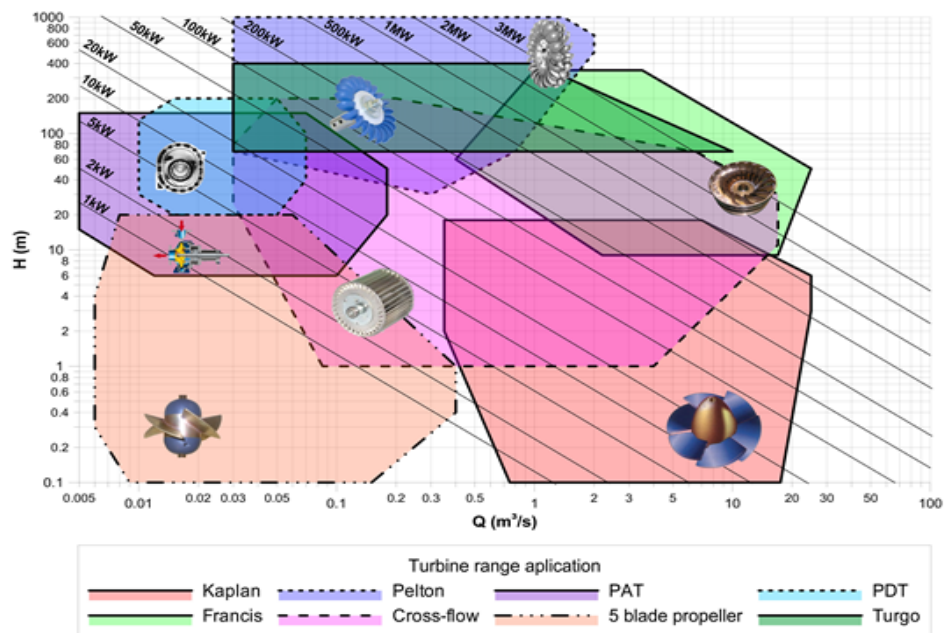


Figure 7.15 - PAT range of applications

Work Package 8

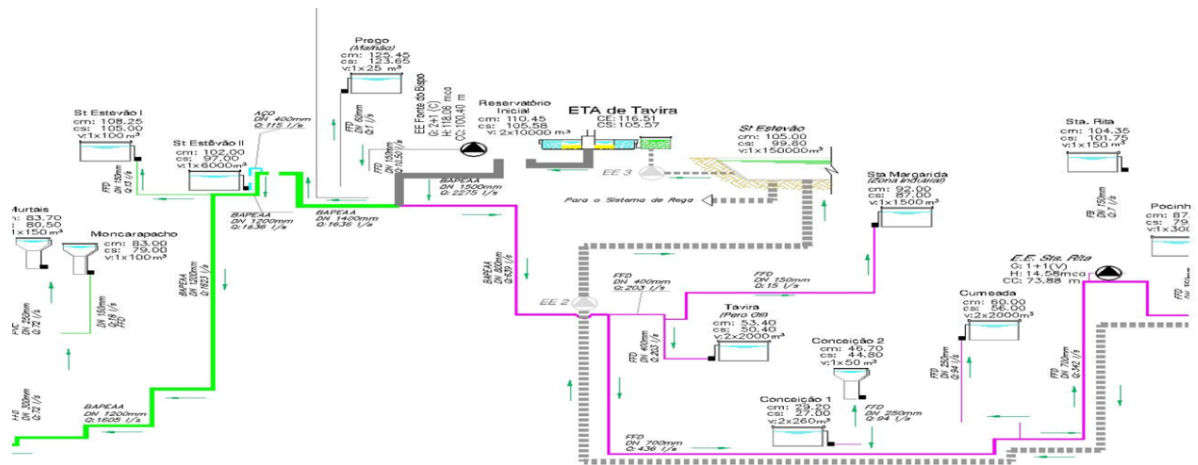


Fig 8.1- Water Distribution System in the South of Portugal – Altimetric scheme

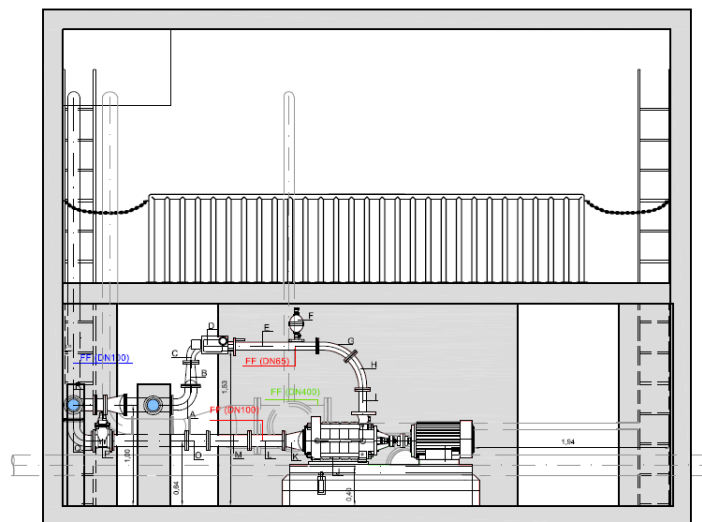


Fig. 8.2 – Installation of PAT (Pump As Turbine) in a reservoir manoeuvre chamber

Work Package 9

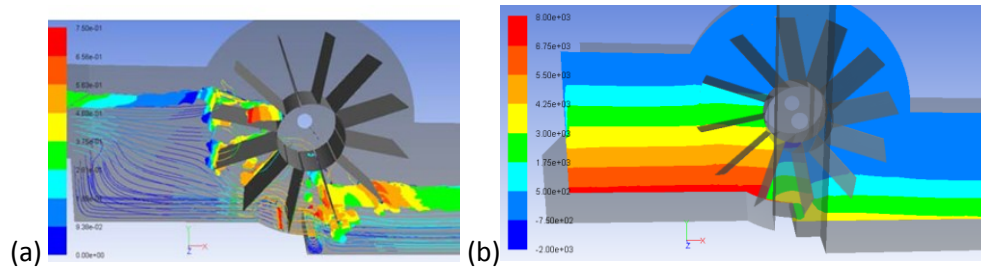
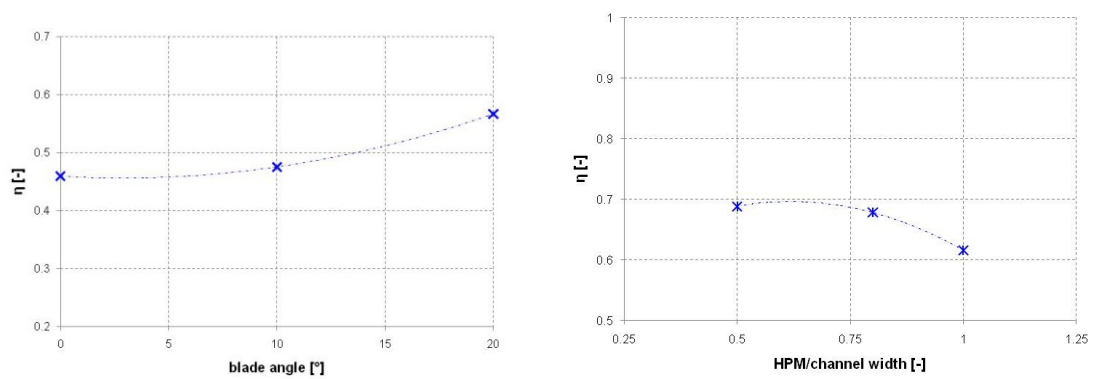


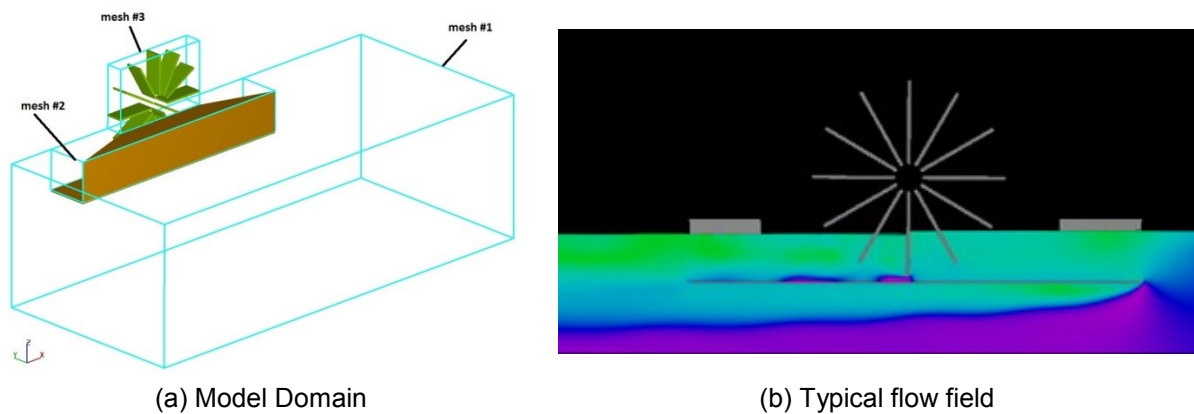
Fig. 9.1: Velocity contour (a) and pressure distribution



a. Variation of blade angle

b. Efficiency as function of channel width ratio

Fig. 9.2: Effect of geometry on HPM efficiency



(a) Model Domain

(b) Typical flow field

Figure 9.3: Flow 3D setup and a result

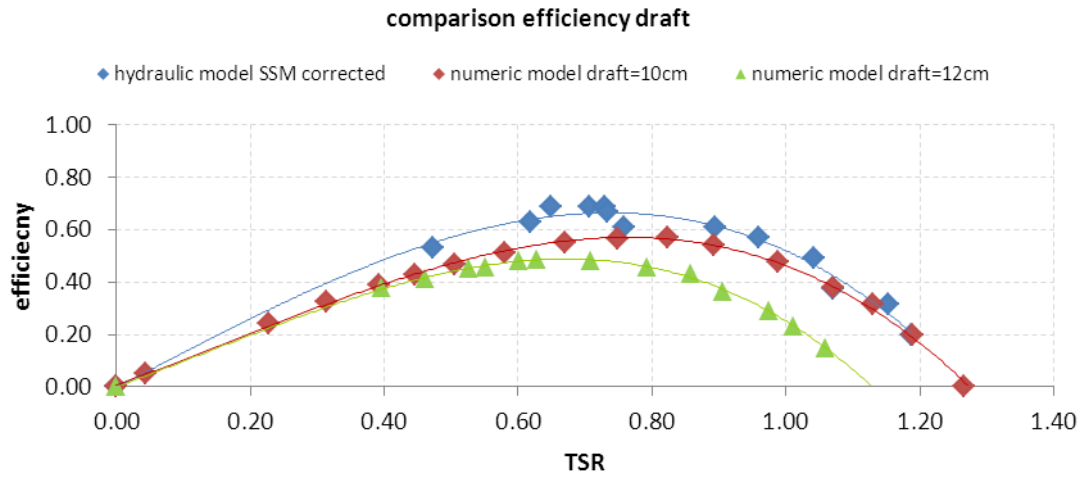
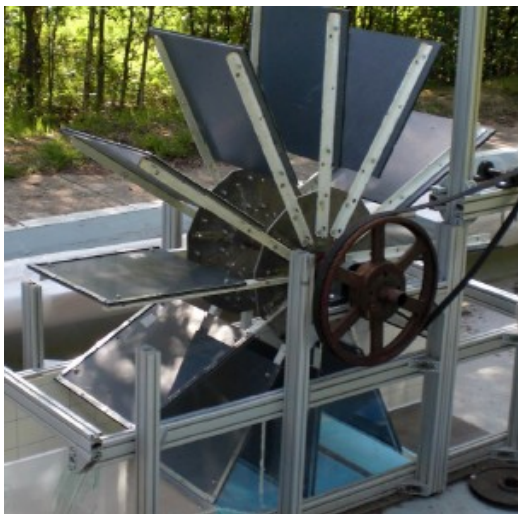
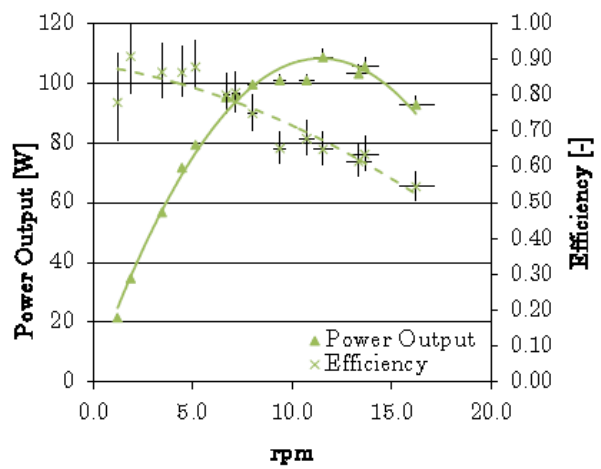


Figure 9.4: Comparison of efficiencies with different drafts and experimental results

Work Package 10



a. HPW, model D = 1.80 m



b. power and efficiency as function of speed

Fig. 10.1: Hydrostatic Pressure Wheel

Work Package 11

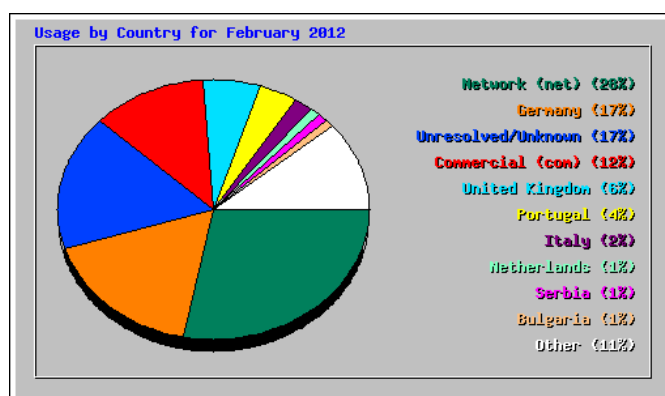


Fig. 11.1: Diverse global activity on the HYLOW website

Work Package 13



Fig. 13.1: Assessment of fish pass effectiveness River Iskar/Bulgaria