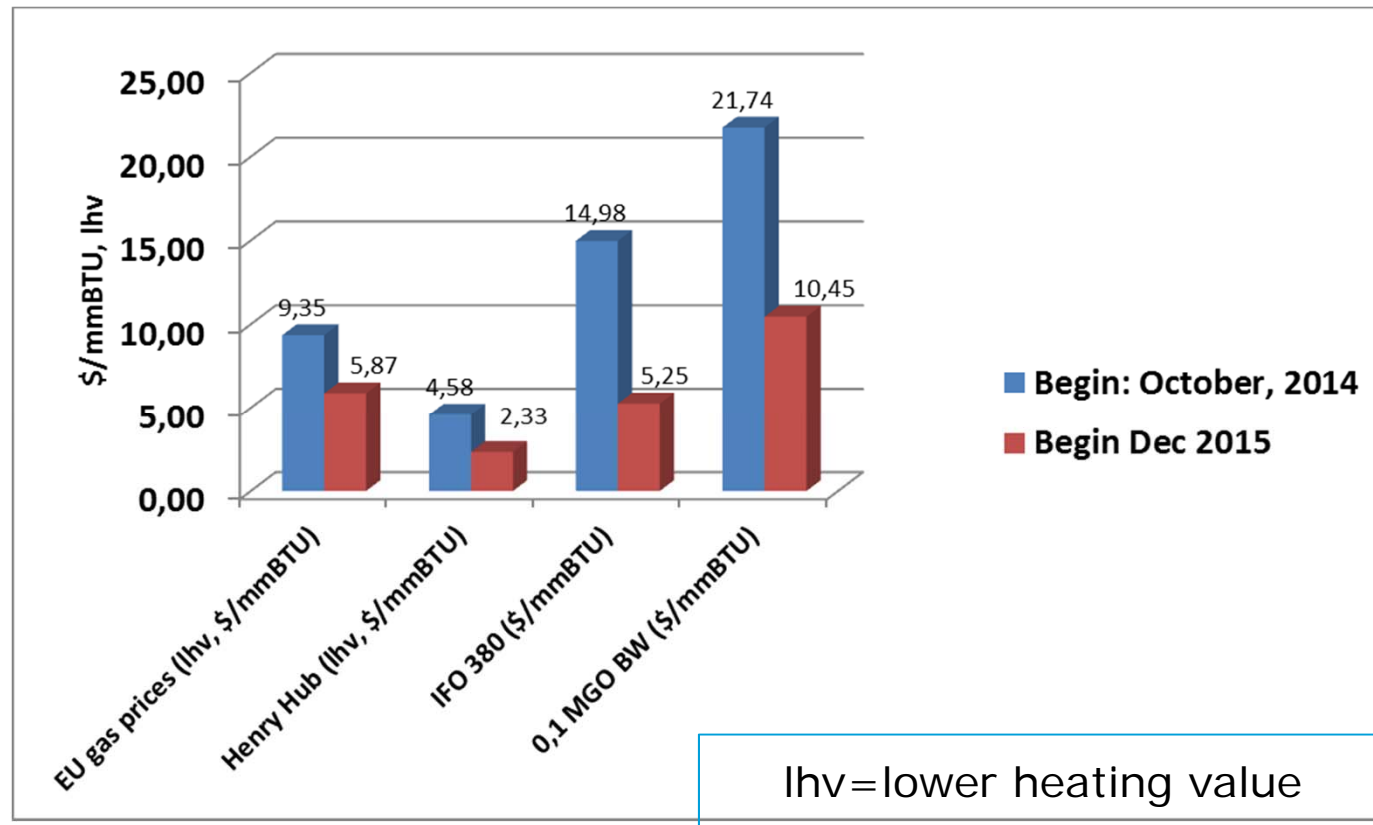


Current price development oil and gas

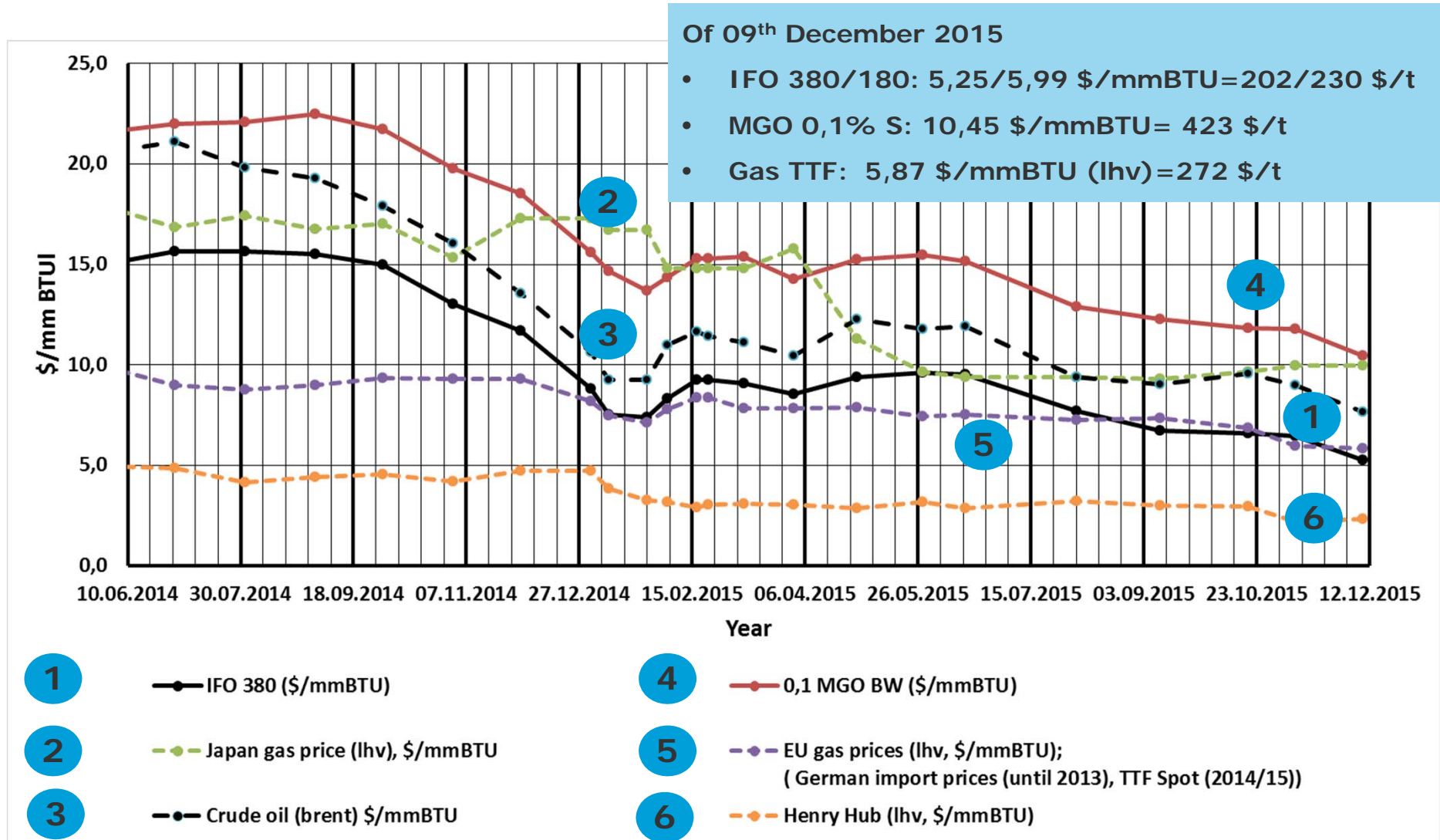
Dr Gerd Wuersig; (9th of Dec 2015)

Gas and Oil prices begin of Oct 2014 and begin of December 2015 (Gas: no liquefaction and distribution included)

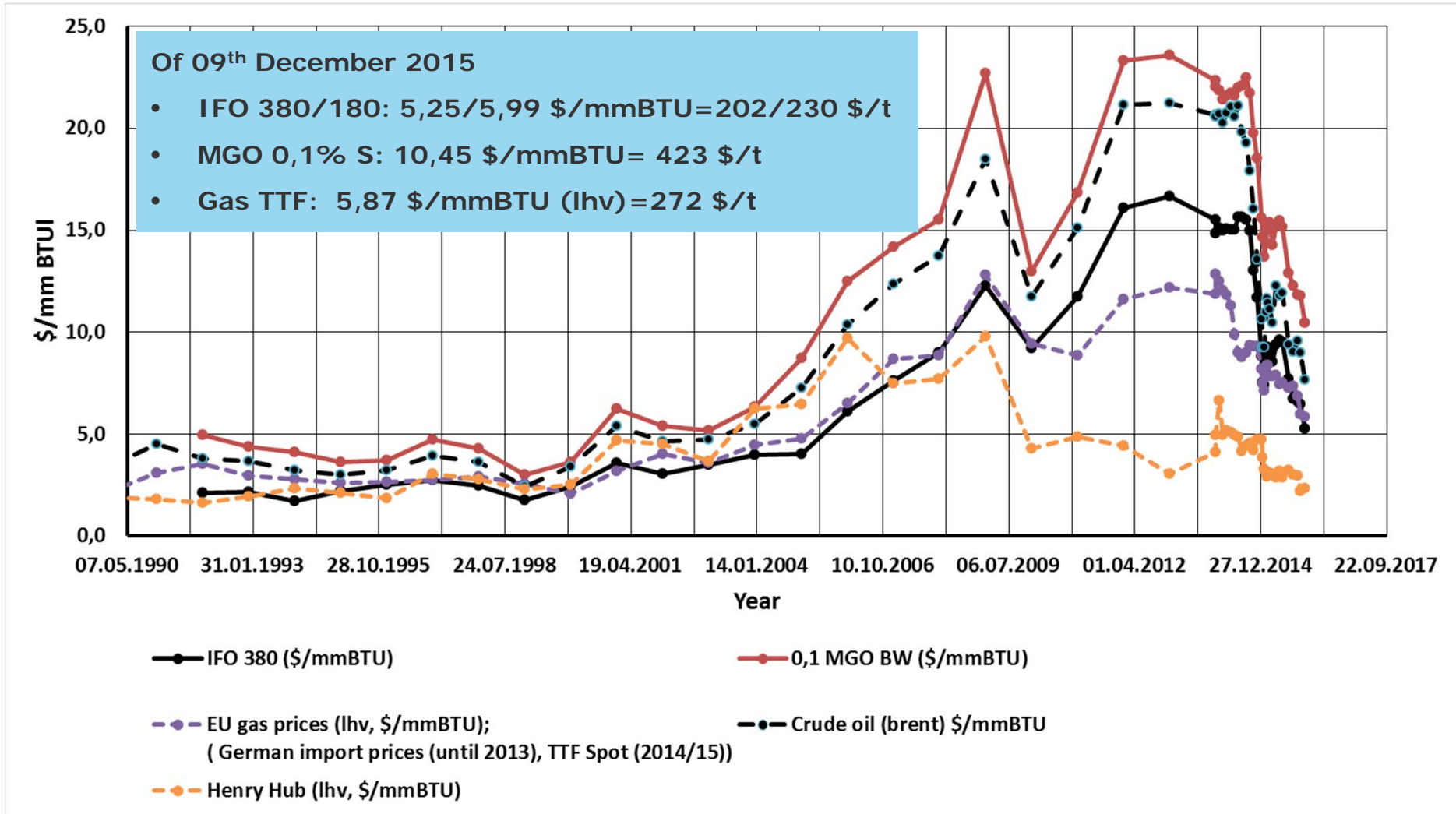


Gas Prices Wue 01.xlsx

Current price development (last prices 9th of Dec 2015)



Price development (last prices begin of December 2015)



Assumptions made for the given figures

- Gas lower heating value (lhv) has to be assumed for ship fuel. Nearly all sources use upper heating value (uhv) which gives about 10% lower LNG prices than indicated here for lhv prices.
- Liquefaction costs have to be added to Henry Hub price. Today values between 3 and 5 \$/mmBT for liquefaction might be used.
- LNG in Europe competes with pipeline gas therefore only costs of distribution to the ship have to be added to gas price
- Supply to the ship must be added to fuel costs.
- Prices in the figures are yearly average prices until 2014. 2014 prices are the spot prices at the beginning of the month.

Used sources

- BP world energy review with average energy prices on gas and oil (internet)
- Bunker World prices from internet for 2014 ff prices of oil
- Henry hub prices from the internet
- HFO and MGO historic prices: DNV GL internal data



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