

## ***Interactive comment on “Numerical and experimental investigation of leaks in viscoelastic pressurized pipes” by S. Meniconi et al.***

### **Anonymous Referee #1**

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**General Comments** The main objective of the article is to analyse the importance of unsteady friction and viscoelasticity in numerical modelling of transients in plastic pipes with an external flow due to a leak. The article is interesting, the problems are presented very clearly, the experimental part and numerical analysis have been carried out at excellent level. For the numerical simulation different 1-D numerical models have been used. The literature review in the Introduction (Section 1) of the article is profound. The results indicate the importance of viscoelasticity in simulating the transient flow with a leak.

**Specific Comments 1.** The article of Zielke (1968) on unsteady friction could be considered as "classical", similar to the Allievi-Joukowski model for transient, and mentioned separately in the Introduction (Section 1) of the article but not in the list of motivated

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publications in the last two decades. 2. The term "rectangular leaks" is given in Experimental setup (Section 2). The authors consider a rectangular hole, but the leak flow is probably not rectangular. There should be some influence of inversion on the shape of outflow. 3. The used 1-D numerical model is introduced in Section 4. To solve the system of Eqs.(1)-(2), models are used for unsteady friction and viscoelasticity (retarded strain). Modelling of friction is given in the article but how viscoelasticity is modelled is not explained. For prospective reader of the article short comments about the used model of viscoelasticity would help to understand the modelling section of the article.

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