



EM Microelectronic

A COMPANY OF THE  **SWATCH GROUP**

Goals of our EKV workshop

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Plan of presentation

1. Introduction : where we (as EM) are with EKV ?
2. Case of Far East foundries
3. EM processes
4. The future of EKV ?
5. Conclusion : What to do ?

Where we are with EKV (at EM) ?

1. Analog designers « love » EKV
2. Digital designer don't care (even don't know)
3. Managers « detest » EKV
4. No EKV available in external foundries
5. Choice is either « bricolage » on EKV or to use BSIM
6. In both cases : unsecure situation until silicon is out
7. ... DFM (Design For Manufacturability) is a joke for critical designs !!!

Case of Far East foundries

1. Only BSIM available
2. Leakages, subthreshold = « n'importe quoi »
3. RDS in Saturation : not reliable
4. Sometimes possible to get measurement files
5. Designers « play » and tune themselves either BSIM or EKV to fit better with their need
6. Approach of EPFL (Maher Kayal) of fitting EKV with BSIM looks to offer an acceptable compromise.
7. ... and to complicate the « game », the reference simulator of the foundry don't have embedded EKV !!!

EM processes

1. EKV is the golden choice : analog designers want it
2. EM is not able to make parameter extraction
3. Parameter extraction is subcontracted outside
4. Worse case parameters are « pifometred »
5. Few follow up of extraction in time
6. Most of the designers who do not know (or do not want to know) « how it came », have an unlimited trust into EKV (DANGER !)
7. → really low satisfaction at management level
8. Is it still right that EKV remains the golden choice ?

The future of EKV ?

1. Do we need EKV for the future (below 0.18um) ?
2. What about BSIM alternative ?
3. My argument as manager : I give no resource for EKV as « others » are able to live without EKV !!!
4. ... grr grr grr
5. Well ... supposing it is « OK for EKV, let's go !!! »
6. Validity for deep submicron ?
7. To be solved : perennity – introduction in simulators – extractions – expertise to do it.
8. EPFL approach would not be a good compromise ?

What to do ?

1. How to deal with few resource for EKV ?
2. Need to build a pool between us
3. What are the minimal requierements to be addressed to this pool of EKV experts ?

Questions to be addressed to day

1. Limitations, drawbacks, traps of BSIM
2. Can BSIM parameters be improved ?
3. EKV : Parameter extraction : what to deal with external foundries ?
4. Experience sharing : How do you work to day for analog, low voltage, RF ... ?
5. Do you know how « others » are doing ?



Thank you for your attention

I wish you a nice and fruitfull seminar

Let's prepare our future