PZ16M status and plans

2015 MSK collaboration workshop

Julien Branlard

PZ16M status and plans

ISE, Warsaw, 12.06.2015

HELMHOLTZ ASSOCIATION

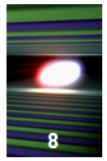
DESY

Last slide from last year's PZ16M presentation

European XFEL

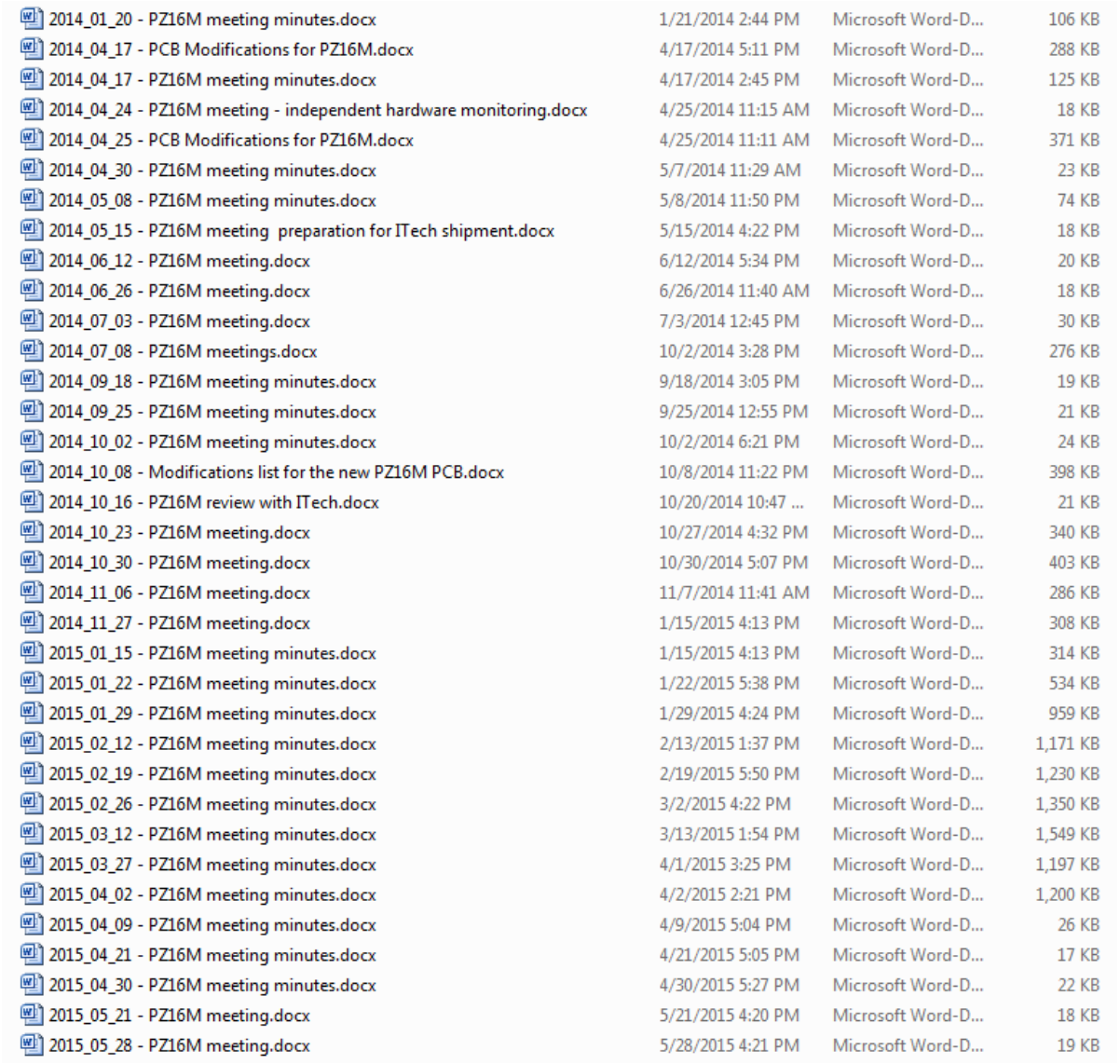
PZ16M: status and plans for mass production

FUTURE PLANS TOWARDS XFEL PRODUCTION



- Ship unit sample ITech
  - Include new PBE panels, new plates, new BOM, new documentation, new test firmware — **DONE**
  - Assembly of 4 remaining units — **DONE**
  - Extra cost due to DESY design change requests — **PAID**
- Evaluation of modification list for current PCB
  - Triggered for safety reasons (FPGA cold override CRYO OK) — **DONE**
  - Stay with minor modifications (avoid several production cycles)
  - BUT wish list is growing
- Next step:
  - Review proposal — **ON GOING**
  - Launch production and call for tender

WORK DONE IN THE LAST YEAR: meetings…



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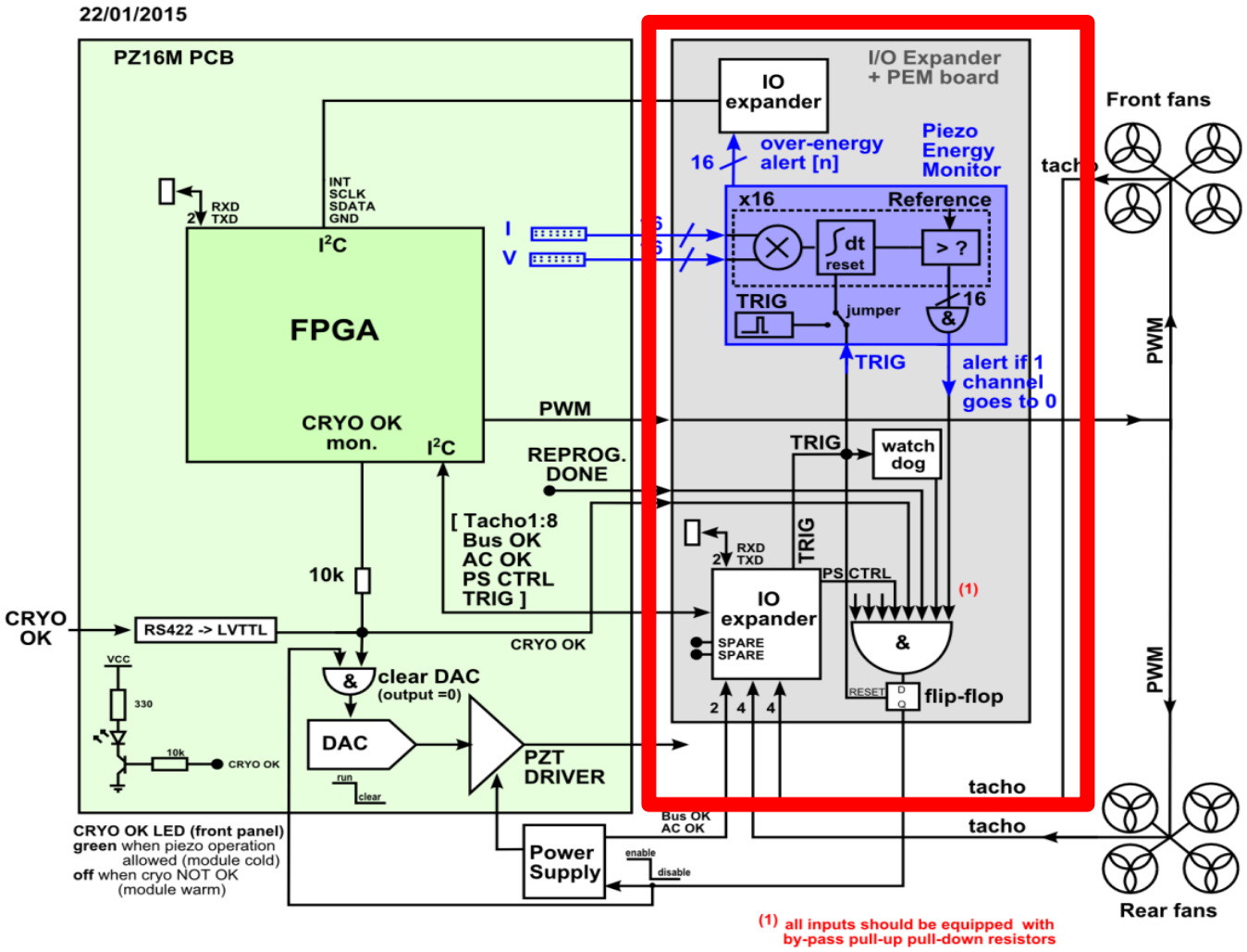
- The PZ16M team
  - **Marcin Chojnacki**
  - Marius Grecki
  - Konrad Przygoda
  - Henning Weddig
  - Julien Branlard
  - with reviewing help from Michael Fenner

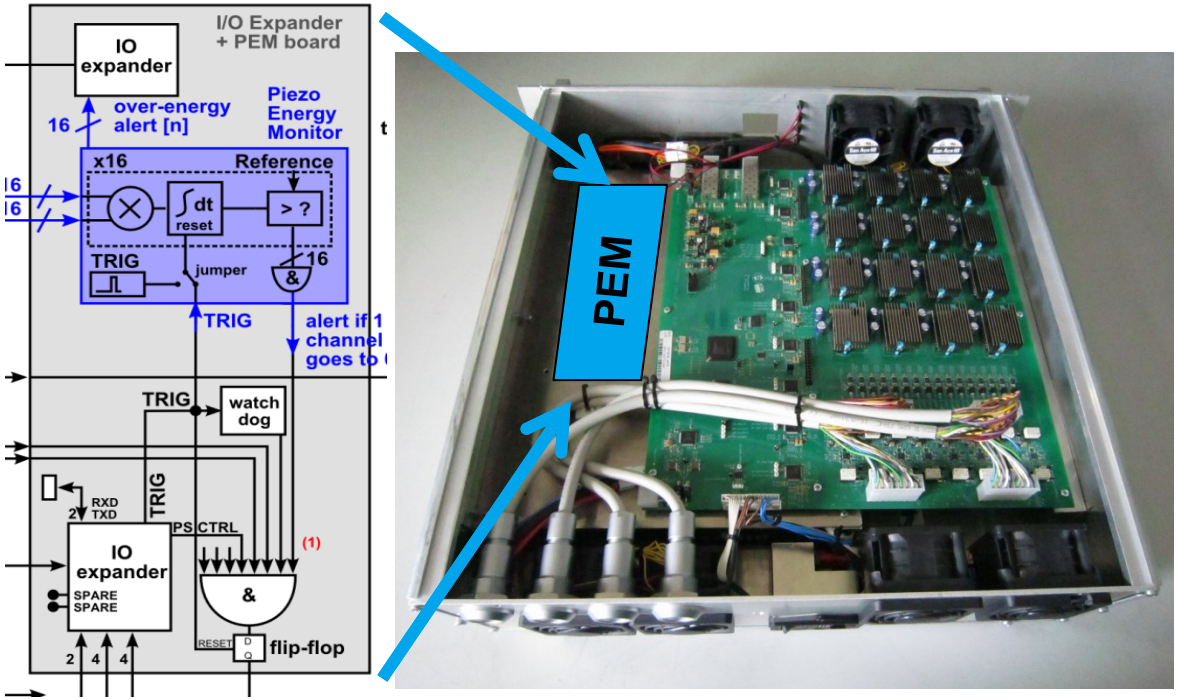
WORK DONE IN THE LAST YEAR: PEM

- Piezo Energy Monitoring (PEM) board



WORK DONE IN THE LAST YEAR: PEM

- Schematic reviewed done
- PCB layout (2-3 weeks)
- PCB review in July
- Production and tests after September



PEM schematic review

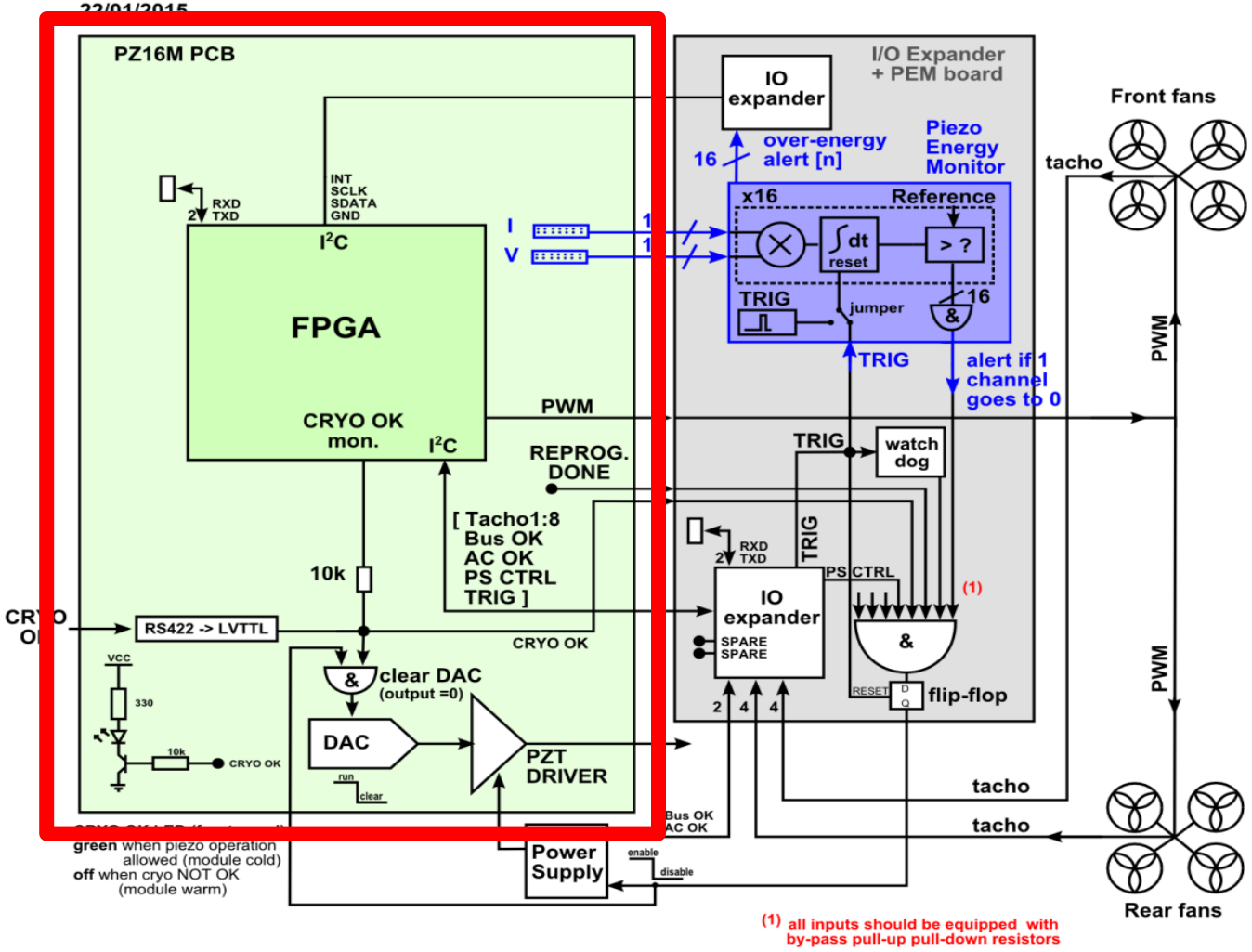
1. General comment:
   a. Add top level block diagram on one sheet
   b. Recommendation: if possible add section of block diagram on corresponding sheet
2. Added connectors to connect to main PCB
   a. Please include manufacturer's name (copy-paste how it was done for other board)
3. Multipliers/integrator/comparator
   a. Resistor instead of potentiometer is good
4. Tap points
   a. Two different type of tap points were used, according to Henning's schematic
   b. (smd or through hole) → good
5. Over current circuit protection
   a. OK
6. All this circuit has to be multiplied 16 times
   a. EXCEPT reset circuitry
   b. Use one sheet per channel
   c. Use separate sheet for reset circuitry
7. "Top" IO expander
   a. Should be address 1
   b. Remove resistors to ground for A1/A2
   c. Place 10k pull up for A0
   d. Add 33 Ohm serial resistor for each leg going to the And gate at output of PEM in case traces are long (clarify with Michael Fenner if this is needed)
8. Trigger section going to monoflop
   a. Only 1x (remove from 16 channel)
   b. Verify connection with TRIG select
   c. Open question about diode in // with R going to VCC (is this correct?)
9. "low" IO expander
   a. A0/A1/A2 → should be address 0
   b. Place PWM and IO on separate sheet
   c. Pull-up R on tacho signal OK (check spec sheet to see if use 330R or 1k)
   d. 0ohm resistor on tacho lines
      i. only for prototype, remove now
      ii. Remove labels
10. AND at output of PEM
    a. Keep pull-up and pull down in case AND logic is changed
11. Watchdog
    a. Check circuitry with Mariusz Grecki

Final remarks

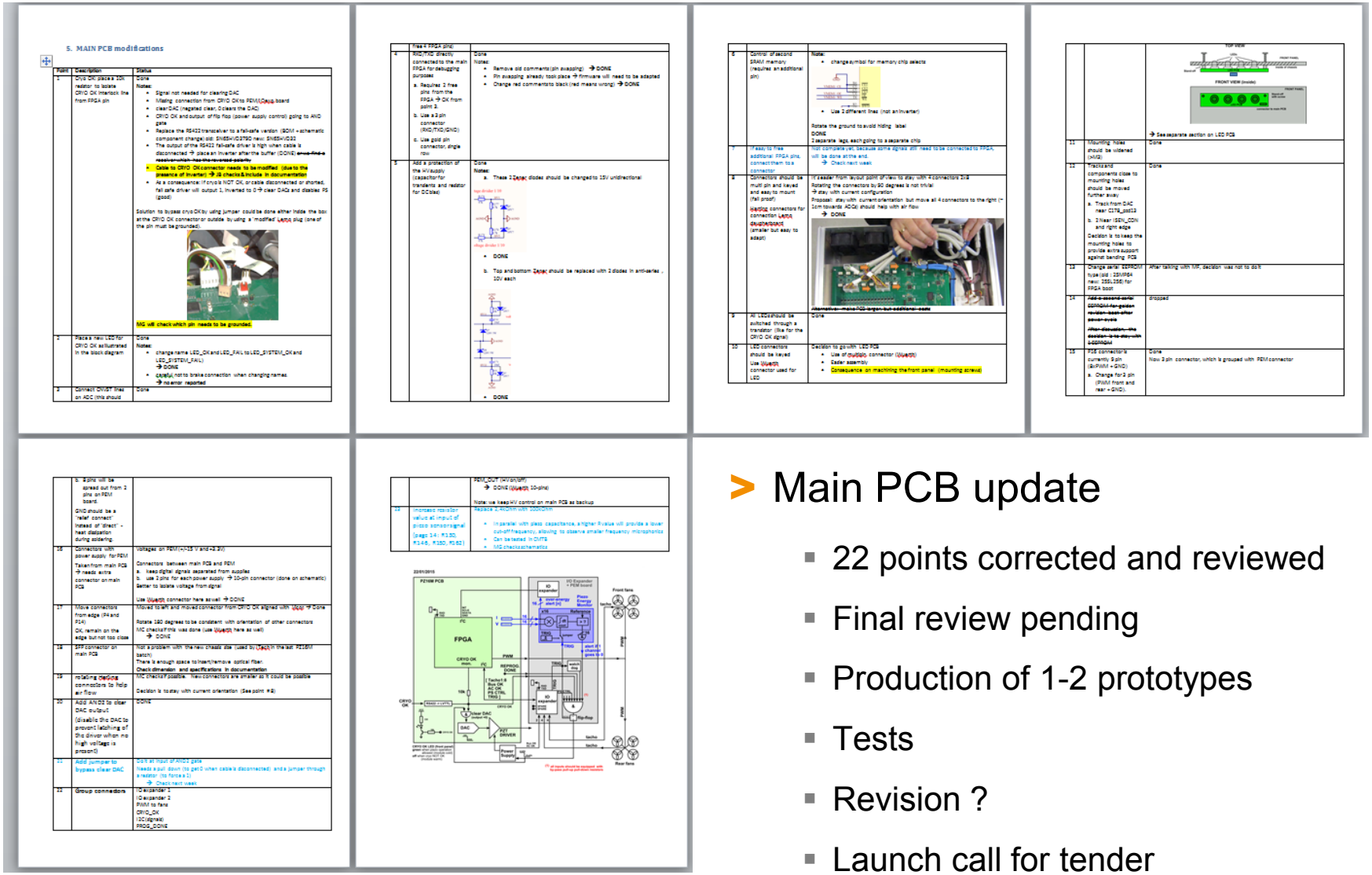
- Marcin can implement all changes for next week
- Upload to SVN
- When approved, PEM PCB layout work can continue
- No meeting next week due to the MSK collaboration workshop
- Marcin might come to DESY in July

WORK DONE IN THE LAST YEAR: main PCB

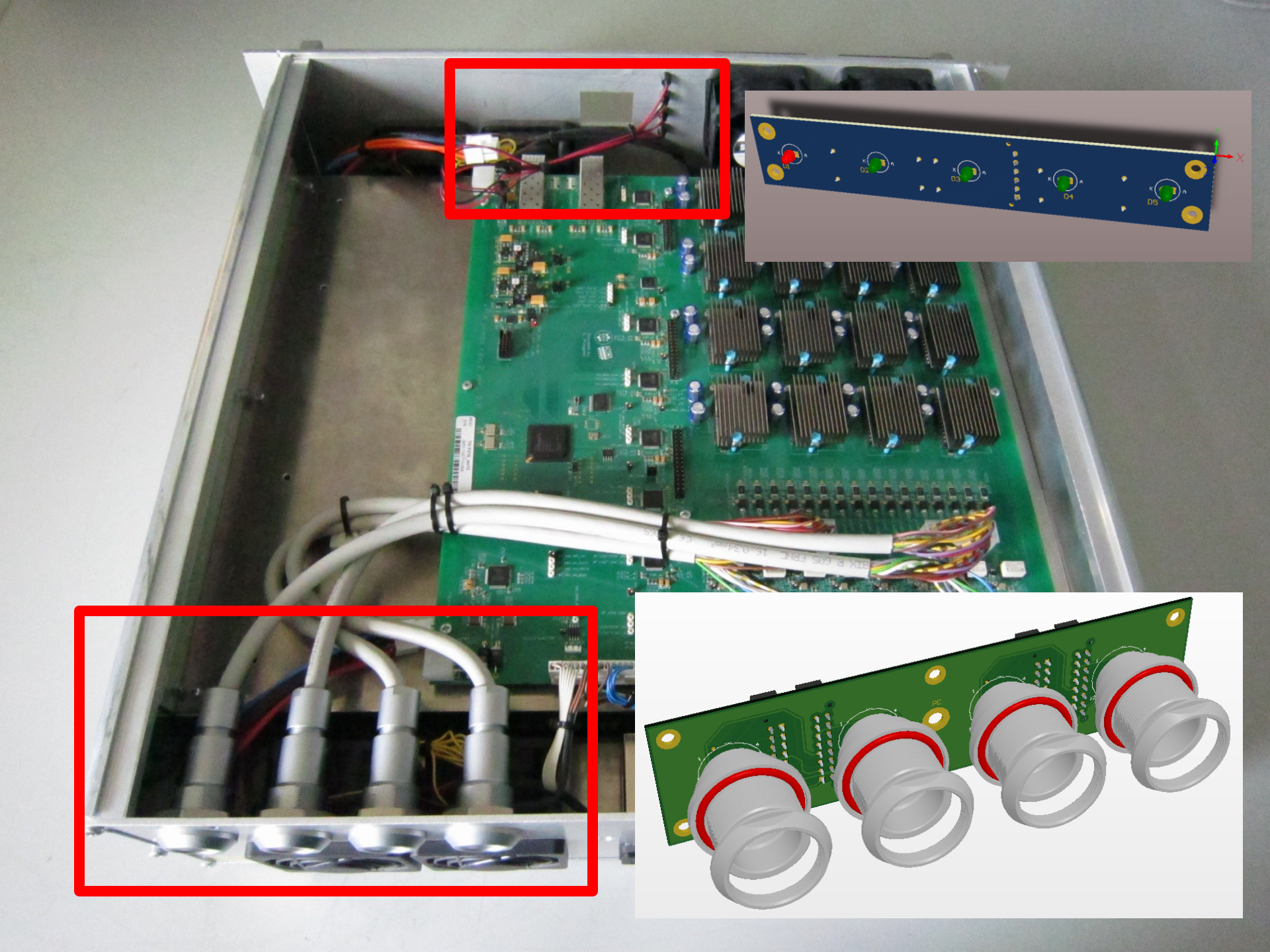
- PZ16M main PCB



WORK DONE IN THE LAST YEAR: main PCB



- Main PCB update
  - 22 points corrected and reviewed
  - Final review pending
  - Production of 1-2 prototypes
  - Tests
  - Revision ?
  - Launch call for tender



WORK DONE IN THE LAST YEAR: firmware

High Level Design of Piezo Energy, Temperature and Impedance Computation

Date: 13/3/2015

Revision: 1.2

Author: Mariusz Grecki

Mariusz Grecki,
Bin Yang,
Lukasz Butkowski,
Julien Branlard

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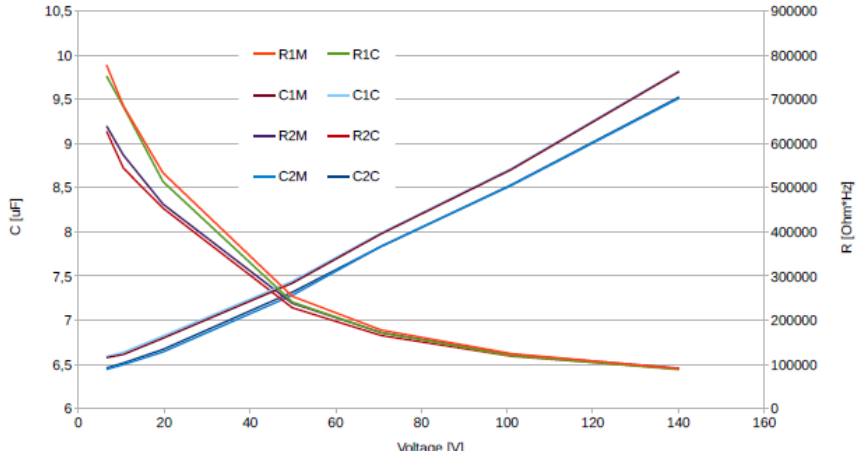

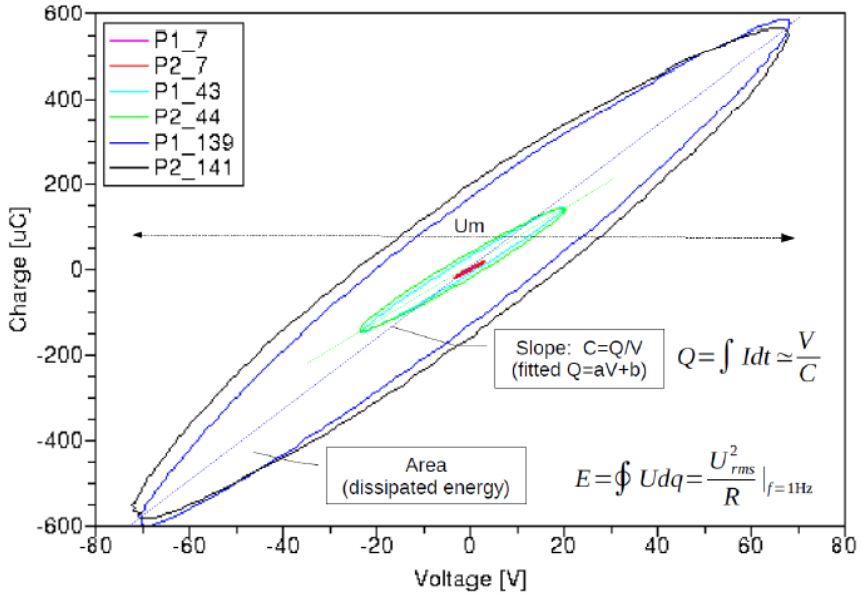

NEXT STEPS (what we did wrong / where we need to improve)

- Careful review of BOM
- Careful review of production data
- Mechanical integration
  - Created problems during the last production batch with ITech
  - **No 3D model, no accurate 2D plans**
  - Do we try production without ? → man power issue
- Schedule
  - Sep. 15: Production of next version PZ16M prototype (PZ16M version2)
  - Dec. 15: Deadline for validation of PZ16M-v2
  - Jan.-Jun.16: Purchasing, production of PZ16M
  - July 16: Installation/commissioning of PZ16M (too late!)

Optimistic: **small margin to get it done in time**
Pessimistic: **we are already too late, we might have to install PZ16M after cool down**

THANK YOU!