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CIRP_2013_Track1_2

Track 1
Related to Scientific Technical Committees:

CUTTING (C)
ELECTRO-PHYSICAL & CHEMICAL PROCESSES (E)
FORMING (F)
ABRASIVE PROCESS (G)

Meeting held on January 23rd, 2013
in Paris, France

Minutes

Present:

Altintas, Y.; Aoyama, T.; Arrazola, P.; Aurich, J.; Axinte, D.; Bathillier, A.; Bauza, M.; Behrens, B.-A.; Beno, T.; Biermann, D.; Bleicher, F.; Bobzin, K., Bourell, D.; Bouzakis, E.; Bouzakis, K.; Boyer, J.; Bramley, A.; Brinksmeier, E.; Brosius, A.; Brown, C.; Brown, E.; Bruzzone, A.; Byrne, G.; Cao, Y.; Carrella, M.; Ceretti, E.; Cheung, B.; Childs, T.; D'Addona, D.M.; Di Ilio, A.; Diaz, N.; Dornfeld, D.A.; Estman, L.; Faughnan, P.; Gakmakci, M.; Galantucci, L.; Guenther, A.; Guo, Y.; Hansen, H.N.; Harada, K.; Hashimoto, F.; Hausotte, T.; Heisel, U.; Helu, M.; Hinduja, S.; Hocheng, H.; Hon, B.; Huis in't Veld, B.; Jawahir, I.S.; Joël, R.; Kakinuma, Y.; Karpat, Y.; Katahira, K.; Kersting, P.; Klink, A.; Klocke, F.; Köhler, J.; Kong, M.C.; Kunieda, M.; Lanzetta, M.; Lauwers, B.; Le Maitre, F.; Levy, G.; Liewald, M.; Linke, B.; Litwinski, K.; Lundblad, M.; Lung, D.; Lupoi, R.; Magnenall, M.; Matsubara, A.; Matthiew, I.; Mayer, R.; Mayr, J.; Merklein, M.; Meyer, D.; Michailidis, N.; Möhring, H.-C.: Mori, K.; Mourtzis, D.; Nele, L.; Obermair, M.; Oliveira, J.; Overmeyer, L.; Özel, T.; Ozturk, E.; Pfefferkorn, F.E.; Plettke, R.; Priarone, P.C.; Raffles, M.; Schilp, J.; Schmidt, M.; Schulze, V.; Schützer, K.; Settineri, L.; Shneor, Y.; Shyha, I.; Sölter, J.; Soshi, M.; Srinivasud, S.; Stöbener, D.; Surmann, T.; Suttop, C.; Takeuchi, Y.; Teti, R.; Tönissen, S.; Tsai, H.-Y.; Ueda, T.; Umbrello, D.; Urreta, H.; Weingärtner, E.; Wertheim, R.; Yoshioka, H.; Zabel, A.; Zäh, M.; Zheng, H.

Final agenda:

1. Opening, welcome
2. Approval of the agenda
3. Ideas for future collaboration
    a. Temperature Measurement in Manufacturing
        i. “On the measurement of temperature in material removal processes, revisited”, presentation by Prof. Davies
        ii. “Calibration setups for temperature measurements”, presentation by Dr. Sölter, IWT Bremen
4. Collaborative Working Groups (CWG)
    a. “Laser in production”, report by Prof. Schmidt, Bayerisches Laserzentrum

5. Track Keynotes
    a. Metalworking Fluids, keynote proposal by Prof. Brinksmeier (KN 2015)
6. Open discussion on the future of Tracks within CIRP
7. Administrative Issues, Conferences and Seminars relating to this Track
8. Miscellaneous
9. Closure

1. Opening, welcome

Prof. Klocke opened the Track meeting at 14.00 and pointed out that a discussion on the future of Tracks within CIRP was to take place later during the meeting. In this context, he expressed his apologies to Prof. Hauschild (CWG EERU) and Prof. Mitsuishi (CWG BioManufacturing) as well as to Prof. Jawahir (2016 Track 1 keynote proposal on "cryogenic processes") for not having granted presentation time to them during this Track meeting.

2. Approval of the agenda

The agenda and the minutes were approved by the audience.

3. Ideas for future collaboration

a. "On the measurement of temperature in material removal processes, revisited", presentation by Prof. Davies

b. "Calibration setups for temperature measurement", presentation by Dr. Sölter, IWT Bremen

Prof. Davies and Dr. Sölter (IWT Bremen, Germany) presented an initiative to extend the discussion on the measurement of temperature in material removal processes beyond the 2007 STC C Keynote paper. The slides are to be found in the annex. In Prof. Davies' view the measurement of temperature in material removal processes is a mature but rapidly accelerating area of research and development in which CIRP has, and continues to play, a major role. The choice of the right measurement technique is as difficult as the measurement itself. Although measurement techniques and results abound, "inter-STC" collaboration is needed to validate the measurements and the models.

Dr. Sölter spoke on calibration setups for temperature measurements and distinguished calibration setups for contacting sensors and radiation detectors. Contacting sensors like resistance temperature detectors (RTDs) and thermocouples are calibrated using a precision thermometer. The calibration procedure for radiation detectors stipulates the heating of a specimen as well as the adjustment of the radiation detector measurements to the measurements of a calibrated thermocouple.

During the open discussion of the topic, the audience suggested to consider aspects of temperature measurements in forming and EDM/ Laser processes as well. A future pathway to collaboration could possibly be a round robin initiative to compare the results of temperature measurements between diverse techniques and partners. This initiative should embrace not only the punctual measurements in single locations but rather the determination of temperature fields including their gradients.

4. Collaborative Working Groups (CWG)

a. "Laser in Production", report by Prof. Schmidt, Bayerisches Laserzentrum

Prof. Schmidt gave a report on the outcomes of the constitutive session of the CWG Laser in Production held Wednesday 8.30 – 10.00. More than 100 attendees were present in the meeting. Based on a survey of recent CIRP publications on Laser technologies Prof. Schmidt concluded that the direct processing by Lasers is underrepresented within CIRP compared to its industrial relevance. Furthermore, the research scope of CIRP does not match to the scope within the Laser community. Therefore, the vision of the newly founded CWG is to promote the understanding of the "tool" Laser and all its key parameters. In this context Prof. Schmidt intends to invite guest presenters who are acknowledged experts within the field of Laser research to future CIRP meetings, compose a booklet, and a keynote paper. The CWG will focus on additive manufacturing as well as on ultra-short pulse laser processes through the installation of two sub-groups.

Some members emphasized the importance of Lasers to the research in STC P. They might be potential users of the fundamental research discussed in the CWG.

5. Track Keynotes

a. "Metalworking Fluids", keynote proposal by Prof. Brinksmeier (KN 2015)

Prof. Brinksmeier presented a more detailed concept of a Track keynote paper on "Metalworking Fluids" after having received positive feedback from the members of Track 1 in Hong Kong. Those fluids are relevant to STC C, E, F, and G, but have not been discussed conjointly within CIRP so far. In Prof. Brinksmeier's view the scope of the paper should embrace the interactions between the technical fluids, the tool, and the workpiece surface as well as their impact on process productivity. Among other aspects the keynote paper may propose a CIRP guideline for the description of metalworking fluids in CIRP papers.

The audience greatly appreciated Prof. Brinksmeier's initiative. However, some members expressed ideas regarding the scope and the title of the paper. With respect to the scope, recycling and post-processing of fluids, fluids for the machining of non-metal materials such as ceramics, as well as cryogenic processing could be addressed. Furthermore, the relevance of environmental issues should - at least - be touched in some section of the paper making reference to more extensive disquisitions on the topic in other CIRP papers. Some voices brought a variety of alternative titles i.e. "Fluids in manufacturing" into play. Prof. Brinksmeier concluded the discussion by announcing that he will present an outline of the paper at the General Assembly in Copenhagen.

6. Open Discussion on the Future of Tracks

Prof. Klocke started the discussion on the future of Tracks by showing two slides on the initial motivation of Tracks as well as the boundaries for interdisciplinary activities within the CIRP structure. Subsequently, he raised the question whether Tracks accomplished the desired goals. The following voices were collected anonymously during the open floor discussion:

- "The idea of Tracks is generally good, but the three Tracks should be consolidated into one single Track."
- "Track chairman seem to fear that there is going to be silence, so they let people give many presentations which are little communicative."

- "A significant number of CWGs were successfully launched through Tracks: e.g. Biomanufacturing, Micromachining, ERUU, Laser in Production, etc. But there is still room for improvement: talks are sometimes to narrow and duplicate STCs."
- "I have a counter argument: The CWG on white layers in the 90s was very successful - without the Track system. I would strongly argue for more collegial discussion of fundamentals, but fewer presentations."
- "My experience shows: Interdisciplinary topics are lost in STCs and in tiny CWGs but Tracks provide a fixed forum to them. As we are an international academy, Tracks should be looking out into the world. And if there are STCs that rather like to avoid such discussions, they may do so. The CIRP structure is large and strong enough to cope with that."
- "The problem is not the Track idea in general but the format; maybe a poster session would be better to stimulate discussion."
- "In general, Tracks are a good idea but the chairmen need to select the topics very carefully."

7. Administrative Issues, Conferences and Seminars related to this Track

Past conferences: All fees were paid and the reports handed in.

Future events: CIRP sponsorship was requested and granted to:

- Dr. Makris: 2nd CIRP Global Web Conference (11.-12.6.2013)
- Prof. Ceretti: 2nd Promed – Design and Manufacturing processes for medical devices, Monterrey, Mexico (12.-14.3.2014)
- Prof. Axinte: 2nd CIRP Conference on Surface Integrity Conference, University of Nottingham, Great Britain (28.-30.5.2014)
- Prof. Dornfeld: 6th CIRP Conference on High Performance Cutting, University of California at Berkeley, USA (22.-25.6.2014)
- Prof. Denkena: 2nd International Conference on System- Integrated Intelligence SysInt, Hannover, Germany (25.-27.06.2014)
- Prof. Schulze: 15th CIRP Conference on Modelling of Machining Operations, Karlsruhe, Germany (11.-12.6.2015)

8. Miscellaneous

If you wish to present slides or have any information proclaimed by the chairman during a track meeting, please let the secretary know well beforehand:
s.toenissen@wzl.rwth-aachen.de

Slides shown during the meeting are enclosed.

9. Closure

Prof. Klocke thanked the members and guests for the attendance and valuable contributions. The Track meeting was closed at 15.30.