

Introduction

The Noeton Textile Research and Innovation Ranking (NoetonTexRank™) key objective is to promote transparency in the research and innovation offer. This transparency is currently not existing. We have experienced that it is very difficult for companies to assess the real strengths and weaknesses of research centres. This hampers the formation of a truly single market for research in innovation in textiles.

Transparency is indeed not a self standing objective. The objectives behind transparency is to promote better cooperation between research organizations and industry, but also to promote quality and specialization in research capacities. By a better assessment of research capabilities, the management of research centres may be incited to review strategies and operational routines.

The ambition we have chosen is a high one, and with limited resources we take a step by step approach in which we invite the research and innovation community to contribute. The first edition of the ranking is focused on scientific excellence and on textile research alone. Next editions may enlarge to fashion and involve further specialization. The basis to work from as yet is a database gathered with over 5000 publications, and over 300 European projects as well as over 20000 patents.

The 2012 NoetonTexRank™ focuses solely on **research excellence**. The criterion of research excellence is measured in terms of publications. There are many caveats with using this criterion but it is inside the research community the most used criterion to measure research quality and it is used as management criterion. It is also the most comparable criterion since awards and funding are often linked to national systems.

Scope of the Ranking

The NoetonTexrank™ research ranking has the ultimate objective to rank all textile research conducted in an institutional or programmatic way.

By **textiles** we mean research on flexible structured materials and its applications starting from fibres. Fibres are usually derived from natural or synthetic polymers. We have selected a string of search terms to select relevant publications. The selection aims at the title of the publication and at the abstract. The following terms have been used: fibres, textiles, clothing and constituent parts of textiles such as yarn or fabric or processes such as spinning, weaving (and non-woven). In order to clean the database we have excluded research on optical fibres, that generally is not in the domain of textiles. Because of the search string research on polymers for which the relevance for fibres or textiles is not referred to in the title or abstract is also excluded. Included in the query is research on composites when the title or abstract mentions fibres or textile structures.

By institutional we mean research conducted by an institute or department dedicated to textiles. by institutional we mean research conducted in a structured way by a group of researchers in any research institute. The institutional criterion is membership of a textile research network be it AUTEX or Textranet. Almost all textile research departments in Europe are member of one of these networks. In our query we are not able to distinguish within a university textile conducted within our outside the proper textile department. The scope is thus slightly larger.

Some programmatic research is conducted by departments not affiliated to AUTEX or Textranet but is relevant for textiles. The most frequent instance is research on composites followed by research on the history of textiles, including its preservation. We have as yet not included research on textile management or on textile design and history of art in the query in 2012. It is likely that we will expand the scope of research institutes in 2013 to all institutes with a systematic textile related research.

Other aspects:

Other aspects of research relevance is only taken globally in the 2012 edition is an overall synoptic table at the end of the survey. In the 2013 edition we shall expand and refine the Noeton TexRank taking into aspects like industrial outreach.

- Industrial outreach
- Human capital
- Infrastructure
- Accountability

Industrial Outreach shall be measured in terms of attracted competitive funding. This criterion could be considered as an indicator of research excellence. However since most competitive funding comes from industry or requires industry to be involved in projects we use this criterion as an indicator not of excellence but as valorization of this excellence. We shall segment between competitive grants and research contracts, with an additional mark for international contracts. Industrial Outreach shall also be measured by assessing the dissemination of research results to an industrial audience as well as an indicator of interaction with industry. This criterion is taken to value dissemination activities (such as conferences) but also activities that bring industry closer to research and innovation such as training and testing activities.

Human Capital: This indicator measures the contribution of a research centre to the formation of human capital. This criterion covers the number of graduates completing a relevant degree from the institute. We take into account masters degrees and doctorates. We also look at the potential of a centre to attract graduates from other countries.

Infrastructure: This criterion covers the quality of installations in a centre. These installations can consist of laboratory equipment to characterize materials, laboratory production tools or pilot scale production tools. However having equipment is not in itself a mark of excellence, hence we have cross checked with publications that equipment is effectively used.

Accountability. Accountability measures the degree of transparency that research centers give in terms of information on their performance and ambition. We look at several aspects. In the first place is the centre focused in its ambitions. In the second place is the centre coherent in its ambition and in its results (criterion excellence). In the third place we examine the way a research centre presents its output (publications list) and finally we reward support to our ranking.

Noeton TexRank 2012: Scientific Excellence

Scientific excellence is only one of the main criteria to rank research centres. It is an essential criteria for university research since, it is used internally as a key performance indicator. For applied research centres it is a less important factor, since industrial impact is the primary criterion of evaluation. Scientific excellence is also an aspect that can be (and is) managed by a research group in terms of publication strategy, co-operation inside and outside institutes. However scientific quality can also guide or even skew scientific priorities.

Methodology:

The basic material for the database is a query on publications in Thomson Web of Science. The query is defined in a way to select for each AUTEX and Textranet member peer reviewed publications related to textiles, textile processes, textile applications. To be precise the database contains:

- Only articles published in peer reviewed journals
- Only articles of which the author was associated to the centre at the time of publication
- Only articles relevant for textiles
- All relevant peer reviewed articles of the selected research centres, also those of groups inside the University not associated to the formal textile department.
- Publications whose authors are working in different centres are equally and fully allocated to each centre

The relevance for textiles has been subjected to a double check. For articles in journals with an impact below 3 the relevance should be clear from the title of that article. For articles in journals with an impact above 3, the impact should be clear from the abstract of an article. All research centres selected have been invited to add publications, however added publications had to comply with the criteria above. For the top 5 research centres we also checked our data with the report published on their websites. In general cooperation with the survey improves the score.

The ranking of Universities can be based on overall scientific production, on the overall quality of scientific production, or on the average quality of scientific production. In all instances the ranking is solely based on the impact factor of scientific journals in which an Institute has published.

We make a distinction between research centres with a scientific status (University) and an applied research centre. This distinction does not always apply as applied research institutes may be linked to Universities. In that case the centre is considered a scientific institute (e.g. ITA and Intexter).

Noeton Texrank™ 2012 Results

Most Quantitative Productive Centres

1. Technical University of Lodz	158
2. University of Ghent	116
3. ENSAIT, Roubaix	111
4. EGE University, Izmir	109
5. Technical University of Dresden	103

Comment: This indicator sums up all peer reviewed articles relevant to textiles. The absolute production can be larger since non-peer reviewed articles can be added as well as articles which relevance for textiles cannot be discerned from the article. The total quantitative output is of course correlated to the size of an institute and in particular the number of PhD students. However since we count publications with authors in two institutions as two articles, those centres that cooperate with others also have a higher output. Lodz leads in quantitative production, but this outstanding score is not repeated in the quality assessment of its output.

Most Qualitative Production (sum of all impact)

1. RWTH	207
2. ENSAIT	167
3. Dresden	151
4. University of Ghent	136
5. University of Lodz	128

Comment: This factor best reflects the overall impact of research of a centre, since it combines a quantitative and qualitative measurement. RWTH Aachen (DWI and ITA Combined) is a clear leader, even if the sum is skewed by one article in a very highly ranked journal. Discounting their best publication they still narrowly lead before ENSAIT, the number two. The Technical University of Dresden, the University of Ghent and the Technical University of Lodz complete the most influential quintet.

Best Scientific Production

Large Centres (more than 50 publication peer reviewed)

1.	RWTH Aachen	3,359
2.	Manchester	1,768
3.	Minho	1,566
4.	Ensait	1,509
5.	Dresden	1,482
6.	Gent	1,189
7.	Ljubljana	0,963
8.	Lodz	0,813
9.	Ege	0,765
10.	Zagreb	0,720

Comment: This indicator is simply the sum of all impacts divided by the number of publications. From the larger centres RWTH Aachen again stands out, followed at some distance by Manchester and then close to each other Minho, Ensait and Dresden. The difference between these three is small and may easily change from year to year. Gent has a relatively lower average quality but still stands out from the following centres.

Small Centres (less than 50 publications peer reviewed)

1.	ITV Denkendorf	2,103
2.	Universiteit Twente	2,034
3.	Univ. Belgrade	1,745
4.	Boras	1,614
5.	Univ. Beira	1,564
6.	Torino	1,542
7.	UPC/Intexter	1,260
8.	Maribor	1,154
9.	Liberec	1,087
10.	Istanbul	1,006

Comment: The second tier of centres have a more modest scientific production, but they nevertheless have a sizeable impact in a more focused domain. All these ten Universities rank better than the larger producers, hence it shows that focus is worthwhile. ITV Denkendorf leads the group, but its production is disappointing in view of the size of the department. Twente is closely afterwards in a second position with a good production in biotechnology and textiles as well as composites. Belgrade comes as best University in Eastern Europe, far before any other University in a new member state. Boras, Beira and Torina are also runners up.

Applied Research Centres (more than 5 Publications)

1. Empa	2,035
2. IFTH	1,498
3. VTT	1,354
4. IVF	1,292
5. AITEX	1,140

Comment: For applied research centres publications is a less relevant benchmark of quality. However scientific publications can be a side effect of research activities. EMPA clearly stands out both in quantity and quality of research and can rival universities. In all other centres the volume of publications is smaller and the impact is at an average level.

Most Outstanding Production (average of top 3 publications):

1. RWTH Aachen (DWI)	18,7
2. Manchester	7,8
3. Dresden	7,3
4. RWTH Aachen (ITA)	6,7
5. EMPA	6,4
6. Boras	5,8

Comment: This criterion looks at the most outstanding quality of publications over the period 2009-2011. RWTH is here segmented into its two institutes. DWI clearly ranks first, but ITA also ranks amongst the top five. EMPA is the only applied research centre with an outstanding record.

Trend (2009-2011)

Absolute Growth:	2009	2011
1. RWTH Aachen	57	110
2. ENSAIT	20	60
3. Lodz	34	44
4. Manchester	19	38
5. Twente	5	27

Comment: In general textile research is progressing in quality, however some research centres have made more progress than others. Amongst the larger centres Aachen and ENSAIT have made the largest progress in absolute terms and ENSAIT also in relative terms. Twente is also a runner up but with less overall impact.

Relative Growth	2009	2011
1. RWTH Aachen	2,04	5,24
2. Manchester	1.10	2,25
3. Twente	1,38	2,23
4. Torino	1,30	1,84
5. Uludag	0,61	1,22

Comment: We have also examined the trend in average impact of publications. The progress of the top 5 is striking with all but one University at least almost doubling their impact. RWTH has made in the last years a clear take off. Twente and Torino are emerging as good niche players. Uludag is clearly growing out of the lower league.

Declining and/or Vulnerable

1. ITV Denkendorf/Stuttgart
2. TU Liberec
3. University of Belgrade
4. University of Maribor
5. Technical University of Istanbul

Comment: The University of Stuttgart/ITV Denkendorf does not have a score in scientific impact that is comparable with its peers in Germany, nor with its size and industrial impact. This partly reflects a limited focus on English publications, on peer reviewed publications and on publications at all. The other vulnerable institutes are all in Eastern Europe. Belgrade's impact is declining, notwithstanding its rather good level. In Turkey Istanbul is sliding, which contrasts with the emergence of Uludag and Ege Universities.

Overall ranking:

The overall ranking is a matter of judgment since one has to combine the several criteria

	Sum of Impact	Average Impact	Best Impact
1. RWTH	215	3,4	9+
2. EMPA	114	2,0	6+
3. Manchester	92	1,8	6+
4. Dresden	151	1,5	6+
5. Boras	60	1,6	6+
6. ENSAIT	167	1,5	3+
7. Gent	136	1,2	3+
8. Twente	53	2.0	3+
9. Belgrade	72	1,7	3+
10. Minho	70	1,6	3+

The overall score shows a clear winner that stands out in the amount, average quality and excellence of its publications, which is RWTH Aachen. This is followed by nine universities and research centres that stand close to each other in terms of volume, quality and excellence. However within this group EMPA is the sole applied research centre.

Synoptic overview

In the synoptic overview that follows we have simplified the ranking in terms of scientific excellence to three groups:

- A Institutes that in terms of quantity and quality of output stand at a good level of excellence within the discipline. We have granted RWTH Aachen a score of (A+) since its quality is at a level matching excellence even within material engineering and natural sciences.
- B Institutes that either in quantity or quality have a significant impact but can make a substantial improvement by aiming at a more refined scope and interdisciplinary research or enhancing their publication strategy. Some institutes are sliding towards a "C" position, some can with relatively little effort shift to the A category.
- C Institutes with a moderate impact in quantity and quality that require a strategic reorientation and overhaul of research management. Some institutes have recently done so or in a growth path to a B position. They should however be disciplined in monitoring the quality of output towards higher impact journals.

Ranking in Context

	Scientific Excellence	Industrial Outreach	Human Capital	Accountability Transparency
1. RWTH	A+	+++	++	+++
2. Manchester	A	++	++	++
3. Dresden	A	+++	++	+
4. Boras	A	++	++	+++
5. ENSAIT	A	+++	+++	+++
6. Gent	B	++	++	+++
7. Twente	B	++	+	++
8. Torino	B	++	+	+
9. Belgrade	B	?	++	++
10. Minho	B	++	++	+
11. ITV Denkendorf/Stuttgart	B	+++	++	++
12. Beira	B	?	?	+
13. Maribor	B	++	+	+
14. Ljubljana	B	+	+	+
15. Lodz	B	+	++	+++
16. Intexter/UPC	B	+	+	++
17. Liberec	C	+	+	+
18. Ege	C	?	+++	+
19. Iasi	C	+	++	
20. Istanbul	C	?	+++	++

We have given a quantitative assessment of both industrial outreach and human capital. We have also given an indication of accountability and transparency provided by the Universities.

Data is gained from websites as well as from returns from questionnaires. In general, and that can also be relevant for future students, information on student enrolment and curriculum can be dramatically improved on most websites. Few universities seem able to convey to future students that attractiveness of a career in advanced and fashionable materials. Also the information for companies is not always efficiently and attractively presented. An effort in clarity can be done.

Industrial Outreach:

+++ Industry is well represented in the governance of a research group. There is an active policy towards alumni. A major share of funding comes from industry either for applied research or testing/training. Industry and academia are well associated in public competitively funded projects. Valorization activities are well structured in the form of conferences, seminars and bilateral access to research. The centre performs an active role in the region or in a cluster. The policy on industrial outreach is formalized.

- ++ A substantial share of funding comes from industry or through competitive funding associating industry. There are valorization activities, sometimes formalized in a cluster, but not conducted in a structured way. The policy on industrial outreach is not formally structured and evaluated.
- + Industrial outreach activities are present but not structured. Their impact is limited to few companies. There is no structured dialogue with industry. Clustering is not existing or not effective.

Human capital:

- +++ The number of students and research students is at an adequate level to provide human capital for academic research and for industry. A solid intake of students at bachelor level also assures sustainability of a centre. The quality of students is recognized in the country and in the international labour market.
- ++ The number of students is at an adequate level to feed the research community. However the number of graduates at bachelor level is below the replacement rate needed by industry. The quality of students may be considered good but mainly be better research institutes in other countries, hence they contribute to a brain drain to countries offering better research careers.
- + The number of students is marginal and the low level of enrolment threatens the sustainability of the centre. Basically the centre is in student population not economically viable. The centre is only viable if the volume of research and contract research is well maintained. The centre is depending on graduates from other schools in order to maintain its research capacity.

Accountability:

- +++ A department website is provided in the local language and english. There is a good visibility of pages for students and for research. Publications are well presented, ideally classified according to type (Uni.Gent deserves a special mention for clarity, also mentioning impact factors). The University has cooperated to our survey for Noeton Texrank
- ++ There is a webpage. There is either a list of publications available or the group has cooperated to our survey. The website has room for substantial improvement.
- + There is a webpage. There is no overview of publications.

Analysis: What breeds success?

Overall University Excellence

A decisive factor is that the University as a whole aims at being world class. This is an important factor for Aachen, Manchester and Gent, all striving for a top position in the most authoritative world rankings (e.g. the Shanghai Ranking). We assume that this ambition creates an internal pressure or peer pressure and emulation inside universities. Moreover excellence breeds excellence and since textile research is often lower in impact than other sciences it also fosters interdisciplinary work. Although we have not examined textile excellence in relation to overall excellence, one must acknowledge that how fundamental textile research may be, it shall often have a lower impact than nanotechnology, biotechnology and oncology. Hence the textile research in Manchester has probably an impact below the average of the university, while in Eastern Europe, textile research might have a substantially higher impact than the university as a whole.

Interdisciplinary work

This is the probably the most important factor. Research excellence is attained at the frontiers of textile research and polymer science, and in applications like medical textiles and composites. Hence centres with high impact work substantially in composites and in medical applications. Research excellence can hardly be obtained in textile research published in textile journals. Textile journals have a low impact (between 0,5 and 1,5) compared to more generic journals in polymer sciences or engineering (between 1,0 and 3,0). The most successful centres publish substantially in non-textile research journals. This may limit industrial impact, but since most industrialists do not read scientific journals anyway, this is probably not an impediment. High impact publications, typically above 3 require a truly multidisciplinary approach since medical journals typically obtain high impact.

Scale and specialization

Scale and specialization matters. The centres with a large impact are also relatively larger. Not only do large centres publish more but they also publish better. However one does not get large overnight, although some centres have indeed grown from a small group around one chair (10-20 researchers) to mid size institutes with 50-60 researchers or made the jump from 50 to over 100 researchers. When a centre exploits fully a good policy and industrial context this is possible. For smaller centres the recipe of success is to specialize (first) and then grow. If national funding is not adequate, specialization is essential to join or orchestrate EU funded projects.

Policy and Industrial Context

Research is not a free lunch. Research quality is better if well funded and the best research comes from countries with a **strong, diversified and competitive** research funding and with an adequate industrial backing. Germany has the benefit of a strong and competitive funding. Funding is national and oriented towards excellence. There is no specific textile nor dominance of regional research funding. Germany has also the benefit of a large industrial base of textile firms but more importantly of suppliers and (potential) users of textiles. We assert that the combination of the policy, funding and industrial

cooperation matters. Although we will focus in 2013 more in impact on industrial valorization of research and human capital, we suppose that there is no conflict between the factors of success: centres with excellent research also have a good industrial valorization and train many students for research and industry.

Scientific Hygiene

Impact factors are largely based on articles being cited. The more citations, the bigger impact of a journal and an article. Knowledge is the only human factor that multiplies when you share it. Moreover a researcher that acknowledges work done by others is expert in the state of the art, seeks differentiation and the boundary of knowledge. A researcher that does not quote colleagues can also be less aware of the state of the art. External pressure also matters: it is nice to control a journal but journals too closely linked to a research group have a low impact. Publishing a lot in "Fibres and Textiles in Eastern Europe" may be a good launching pad for starting researchers but does not contribute to a high impact.

Scientific hygiene can be substantially improved in textiles by cross citing each others work. This increases the impact of journals, but also obliges researchers to acknowledge state of the art and to go beyond it. This may foster specialization, take out duplication of research efforts and overall increase quality of research.

Research and Publication Management

We have not assessed the internal management of research centres, since it would involve more qualitative research. However the top institutes provide guidance and support in the publication strategies. Young researchers are closely coached by the seniors. Promoting interdisciplinary work helps. Promoting publications across countries helps. Publishing slightly modified versions of articles in several journals may assist a take off (to reach average impact of 1,5) but real excellence is obtained by being targeted to top journals. In terms of management of output, succesfull centres also do well liaise between papers at scientific conferences (to test concepts and stimulate feedback), peer reviewed journals to get scientific recognition and simplified formats to use in valorization activities. There is as far as we see know no conflict between scientific excellence and valorization: the best centres are also active in valorization. The success of RWTH Aachen is possibly largely linked to the quality of management of the relevant institutes and the clever diversity of instruments mobilized.

Transparency helps

The research world is changing since transparency is increasingly of importance. Since there is competition between research centres and because companies look for competences across borders, creating transparency is a source of trust and efficiency. This ranking is also an attempt to improve transparency in the European research area. Transparency also gives information to improve internal management of resources. When it comes to this survey, we are greatly helped when research centres have a list of publications on their sites. In addition this ranking also gains in quality when centres comment to the information we have gathered or supply additional information. The impact is not decisive, but the centres that have corrected our findings score slightly better than those not responding to our mailing.

Go and no-go-zones

The management of research often stresses the dilemma of fostering scientific excellence against optimizing industrial valorization. It is often said that there is a dichotomy between both objectives. We tend to not believe this argument.

Universities are funded largely through taxpayers money and they have a public duty to perform in terms of producing excellent research and excellent graduates. Although the internal incentive system may not always orient research staff towards producing a high quality output, there is little public discussion about the relevance of excellent research. Moreover if publicly funded research delivers results, these results should be shown. The accountability, but also attractiveness of the presentation of research results leaves much to be desired for the overwhelming number of universities. Hence many Universities could simply by better management of their staff and better structuring of their websites create better results, better accountability and a more attractive presentation of results.

The most successful research centres in terms of scientific impact have also active connections to industry and have a rather large number of graduates going into industry. There are probably some smaller and specialized centres with a high scientific impact and less industrial impact. RWTH Aachen and ENSAIT are the two large textile universities combining research excellence, significant contribution to human capital and industrial valorization. ITV Denkendorf and Gent are important players in industrially relevant research, are active in outreach activities but could easily gain in excellence by a more focused publication strategy. Twente and Torino are the best example of more focused research centres with both a good research track record and work with industry.

There are probably a large number of applied research centres (typically members of Textranet) that have mainly industrial impact but have rightfully so less focus on scientific publications. EMPA is the only one actively publishing, and thus very visible in our ranking. The other centres seem not to promote publications by their staff. In general, in an increasingly European Research Area, a better presentation of strengths of the applied research centres is to be recommended. Too many Textranet members seem to follow a catch all policy. They probably have to play a generalistic role in their region, but specialization is needed to operate at a European scale.

What is worrying though, is a large number of research centres with low scientific impact and low Industrial impact. More worrying is that these centres are often based in regions with a large (but not innovative) textile and clothing industry. We would like to challenge the wisdom of publishing a large number of articles in journals with low impact and a limited audience. We especially challenge this wisdom when the regional industry has needs (that might be scientifically less challenging) but probably may attain similar impact of publications. Even more worrying is that in many countries, even in Italy, the development of human capital is far below replacement level. We accept that the context to attract students to textile careers is challenging, but in view of the poor quality of many websites we wonder if departments are really trying to attract students.

Table 1 Quantitative Impact

Institutes	Total Relevant Publications	Total Sum of Impact factor	Total Average of Impact factor
RWTH - Aachen (DWI and ITA)	64	215,7	3,371
TU Dresden	103	151,2	1,482
TU Lodz	147	116,8	0,794
EMPA	56	114,0	2,035
ENSAIT	72	111,3	1,546
U.Gent	87	109,0	1,268
U.Minho	69	108,6	1,575
U.Manchester	51	91,7	1,798
Ege U.	108	83,2	0,770
INCDTP	87	75,7	0,870
U.Belgrade	41	71,6	1,745
U.Torino	40	66,8	1,671
HB Boras	34	56,1	1,649
U.Ljubljana	54	54,5	1,009
U.Twente	26	52,9	2,034
U.Maribor	41	47,6	1,161
TU Liberec	43	46,8	1,087
GAU Iasi	62	43,2	0,697
Istanbul T.U.	41	42,2	1,030
INTEXTER/UPC	30	37,9	1,263
U.Beira	19	29,7	1,564
VTT	17	23,0	1,354
ENSISA	22	21,9	0,997
ITV/DENKENDORF Stuttgart U.	9	18,9	2,103
U.Bielsko Biala	20	18,0	0,899
IFTH	7	10,5	1,498
IVF	8	10,3	1,292
U.Zagreb	19	9,9	0,522
HWU	11	9,7	0,881
AITEX	8	9,1	1,140
CETEMMSA	3	7,8	2,600
Kaunas TU	11	6,6	0,596
LEITAT	3	6,1	2,017
Tirana U.	5	4,5	0,909
Tampere U.	4	4,0	1,001
DTI	4	3,6	0,912
LTI	8	3,6	0,454
IW - Textile Research Institute Poland	4	2,8	0,707
CITEVE	2	2,8	1,389
TEI Pireaus	2	2,4	1,220
STFI	1	1,6	1,581
Centexbel	1	0,6	0,597

Table2 Qualitative Impact

	Average of Impact factor			Max of Impact factor			Total Average Impact factor
	2009	2010	2011	2009	2010	2011	2009-2011
RWTH - Aachen (DWI and ITA)	2,039	3,182	5,281	5,982	7,883	32,841	3,371
CETEMMSA		1,774	3,013		1,774	5,101	2,600
ITV/DENKENDORF Stuttgart U.	2,767	2,694	1,602	3,239	3,862	3,723	2,103
EMPA	1,685	1,734	2,937	4,63	3,463	9,273	2,035
U.Twente	1,382	2,063	2,228	2,41	3,829	4,457	2,034
LEITAT		1,102	2,475		1,102	3,71	2,017
U.Manchester	1,101	2,041	2,251	2,41	9,865	8,508	1,798
U.Belgrade	1,950	1,577	1,670	4,144	3,463	5,327	1,745
U.Torino	1,304	1,422	1,837	2,901	2,352	5,101	1,671
HB Boras	3,553	1,357	1,291	9,991	2,518	2,863	1,649
STFI	1,581			1,581			1,581
U.Minho	1,546	1,438	1,775	4,504	3,778	3,28	1,575
U.Beira	2,753	2,012	0,938	4,144	2,97	1,366	1,564
ENSAIT	1,256	1,715	1,589	2,816	3,829	5,327	1,546
IFTH	2,816	1,824	0,734	2,816	3,463	1,249	1,498
TU Dresden	1,554	1,569	1,346	6,99	9,65	4,896	1,482
CITEVE			1,389			1,503	1,389
VTT	0,960	1,715	1,403	1,452	3,044	3,604	1,354
IVF	1,359	1,240	1,259	1,471	1,24	1,296	1,292
U.Gent	1,019	1,368	1,346	2,034	4,085	2,863	1,268
INTEXTER/UPC	0,914	1,293	1,392	1,640	3,074	3,074	1,263
TEI Pireaus	0,581	1,859		0,581	1,859		1,220
U.Maribor	1,338	0,851	1,149	3,167	1,898	2,817	1,161
AITEX	1,129	1,102	1,296	1,203	1,102	1,296	1,140
TU Liberec	1,330	1,263	0,767	4,037	3,188	2,817	1,087
Istanbul T.U.	1,379	0,859	0,939	4,144	1,851	3,723	1,030
U.Ljubljana	1,122	0,798	1,210	3,167	3,463	3,463	1,009
Tampere U.	1,797	0,576	1,056	1,797	1,102	1,056	1,001
ENSISA	1,085	1,073	0,825	1,771	2,22	1,102	0,997
DTI	0,791	1,402	0,055	0,791	2,169	0,055	0,912
Tirana U.		0,050	1,124		0,05	1,696	0,909
U.Bielsko Biala	1,190	0,857	0,692	1,901	2,325	1,24	0,899
HWU	0,360	0,823	0,981	0,36	0,97	1,472	0,881
INCDTP	0,546	1,131	0,963	1,842	3,074	2,16	0,870
Uludag U.	0,609	0,724	1,222	1,203	2,349	2,863	0,818
TU Lodz	0,740	0,748	0,895	2,102	1,899	3,6	0,794
Ege U.	0,773	0,739	0,794	2,993	2,56	2,775	0,770
IW - Textile Res.Institute PL	1,471	0,365	0,629	1,471	0,629	0,629	0,707
GAU Iasi	0,581	0,765	0,769	1,955	1,859	2,246	0,697
Centexbel	0,597			0,597			0,597
Kaunas TU	0,299	0,519	0,897	0,299	0,629	1,446	0,596
U.Zagreb	0,522			2,993			0,522
LTI	0,299	0,409	0,756	0,299	0,409	1,102	0,454

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