
Blocks and Hurdles, Chutes and Slides: Women Engineers in the Automotive Industry

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Introduction

Engineering is a male domain. This can be diagnosed when looking at the Austrian situation. Considering the 10 % share women engineers hold, Austria ranges at the lower end of the EU scale, the EU-25 average being 18 % (She Figures 2006). Data and experiences from Scandinavia, North America, Southern and Eastern Europe show that men and women can actively participate on an equal footing in shaping the technological society in which we live. Furthermore, the automotive industry worldwide increasingly employs women engineers in an attempt to reflect the diversity amongst their clients and costumers.

The project

In 2004 we completed a one-year research project 'Engineer Your Future – Women Shaping Technology'. The project was financed under the Future Funds Programme of the Provincial Government of Styria and was carried out in close co-operation with one of the major companies within the ACstyria Autocluster GmbH (Thaler & Wächter 2004). The aim of our project was to develop recommendations and to define first steps towards a gender-balanced engineering workforce to help facilitate an increase in the number of women engineers and improve high profile career perspectives within the region of Styria.

Qualitative and quantitative methods were applied to define the status quo and identify supportive and hindering factors for women engineers' careers. Twenty female students in their final year and 16 graduates from

relevant engineering degree courses at technical universities and universities of applied sciences in Styria were investigated through an online questionnaire to find out more about their career expectations and their perceptions of potential future employers. Document analysis of the internal employee magazine, job advertisements, and the company's website provided further material for interpretations and suggestions. Good practice analysis of other companies in the automotive industry was used for benchmarking and some existing role models throughout the industry were identified (cf. Thaler 2006, 39ff).

To better recognize employees' personal perspectives, attitudes and beliefs regarding challenges and career opportunities within the company, three focus groups were carried out, two with women engineers (eight in total) and one with male engineers in middle management positions (again eight in total). These were audio taped and transcribed. Using a grounded theory related approach of Strauss, Glaser & Corbinie (cf. Muckel 2001), the transcripts were clustered according to evolving topics and then interpreted.

'Make a wish'

One of the questions female students and graduates of engineering degree courses answered in the online questionnaire was what they considered important in their work as engineers. The answers show that their needs, demands and expectations focus on being taken seriously as technically competent persons and not being discriminated against because of their gender.

'What is important to me as a female engineer (...)'.

- 'To be respected as a person and be judged according to my work accomplishment, and not labelled as a woman.'
- 'Recognition, success, leisure time, fun at work, constant broadening of my horizon, acquisition of language skills and social skills, a co-operative team, no sexism at work.'
- 'Good working atmosphere, not being judged according to my appearance (woman / not woman, dress code).'

- ‘To get the same chances and equal opportunities as my male colleagues.’
- ‘That I can do my work like everybody else and am treated as an equal.’
- ‘That regardless of the gender, performance and social behaviour count; that I can put my technical competencies into action without having to prove them over and over again; that work, performance, competencies are accepted, acknowledged and recognized regardless of the gender of the actor.’

On the other hand, aspects of work climate and daily work life were closely related.

- ‘Constructive co-operation, flat hierarchies, clear responsibilities, very good work climate.’
- ‘To be accepted by the team, to receive positive feedback, praise, approval for an important success for the company; appreciation of everybody in the company, be they academics or not.’

Two comments referred to the particular challenge of communicating engineering work to lay persons and to the more general topic of the role of engineering in society.

- ‘To be able to explain my work to non-engineers.’
- ‘Engineering should be a means to an end and not become an end in itself.’

‘It’s a man’s world’

From within and without, the company investigated is perceived as a ‘masculine enterprise’, a view confirmed by several focus group participants as well as women students and graduates questioned online. Statistical data on the workforce also supports this view. Within the company’s R&D departments, only very few women are employed as engineers with most being the lone female in an otherwise all male grouping. At the time of our investigation only one woman had made it to the level of project manager.

66 *Christine Wächter*

Considering the results of the online questionnaire, 48 % of the women are of the opinion that in the respective company 'only men can have a career', 58.4 % think that 'only men have a say', and 79.2 % do not expect that 'women are in key positions'. 88.7 % do not see any attempts of the company to 'target female engineering graduates in their recruitment efforts' and 72 % do not believe that the company 'focuses on building gender diverse teams'.

Results from the analysis of job advertisements and the website provide further evidence in support of these perceptions. No statements are made on the company's commitment to support female engineering students. Nor is there any mention of the activities that do exist to increase the number of women specifically in technical jobs.

The focus group participants likewise are not aware of any activities in this direction. The male engineers specifically pointed out that the quota of female engineers in the company by no means corresponds with the quota of graduates or quotas in other companies they know of. In all three focus groups there was strong agreement that more women, especially in the engineering workforce, would be welcome. As one engineer states:

'I believe the company does not employ women engineers in a ratio that would reflect the graduation rate. If there are only 100 women engineering graduates in all of Austria, nothing would speak against having all the 100 work for us, would there?!'

The female engineers are of the opinion that the goal of increasing the quota of women engineers within the company must be achieved through a top down strategy. However, commitment from top management is not clearly visible.

'Well, all big car manufacturers meanwhile have an outspoken "woman policy" that is communicated externally, and that is something we do not do.'

Statements from the male engineers support the analysis of the company being a 'masculine enterprise'.

‘I believe that even though we claim to be a women friendly company, in the end we are a “male company” (...) in my opinion the company is a male dominated enterprise.’

‘Well, I think it is unimaginable for the company to have a female CEO.’

In the female focus groups, participants agreed that the enterprise is clearly male dominated not only regarding quantitative aspects but also as far as decision making and power relations are concerned.

‘(...) I do not know of another woman in my department (...)’

‘(...) I think I am the only female engineer.’

‘I was the only female project leader.’

‘In my opinion the company is a pure men’s club. Men determine what a woman is allowed to do, how she can progress. All that is decided by men.’

‘It’s a man’s world and women have to accept that it is a man’s world.’

External and internal communication of the company reflects this masculine image. As a male engineer puts it:

‘Well, I think our external communication is extremely technology oriented, towards our costumers as well as towards our employees (...) we make no effort at all to address female engineers.’

To help counteract and transform this tendency, a number of suggestions were proposed that may be of some use in creating a more welcoming atmosphere to women engineers in general. These include some alterations to the company’s website and internal and external communications. For example, by better promoting and spotlighting, through picture and word, the actuality of the competencies, commitments and contributions of women the company has indeed employed as engineers, the company would facilitate a normalisation of gender inclusivity. This would signify a more hospitable attitude to gender inclusiveness not only to present employees but also to potential new female recruits. This process would

also increase the visibility of the female employees as role models for aspiring female engineers. Seemingly gender neutral language could be replaced by gender sensitive wording, by using appropriate male and female terms. Thus women may feel addressed directly and do not have to 'feel included' in the generic masculinity. They would also become visible on the linguistic level which is of great importance and significance in such an overwhelmingly masculine domain as engineering. For how we use the languages we speak, their words, concepts and images have profound effects on our understandings and perceptions, shaping our behaviour and thereby the physical world in which we live and work. Language reflects, and at the same time has the capacity to shape or construct our perceived realities (cf. Spender 1980). Stahlberg and Sczesny (2001) have proved in their experiments with German texts that women are not included in the generic masculine form. Texts written in generic masculinity make both men and women less often think of women as the persons referred to.

Language affects our perceptions of people, their roles as engineers or as actors in the engineering world, engineering and technologies in general. Wilson (1992, 901) sees language, technology, gender and power as an 'example of how men do dominance. Metaphors, particularly those associated with science and technology, can also help reinforce patriarchy at work. (...) Women are almost rendered invisible by the world of science and technology.'

Especially for the field of science and engineering, where women are widely underrepresented still, it is of special importance to make women actors audible and visible – as experts, lay experts, party involved – by using non-sexist and non-discriminatory language and images.

Complemented by matching photos showing men and women as active engineers, the company would set a strong signal in the sense of 'We not only are an equal opportunity employer, we also want to specifically address women.' This is also applicable to the apprentice level. Pictures of male and female apprentices in technical jobs increase the visibility of women in non-traditional professions internally and externally.

Getting in¹

Over the last ten years, in our various research projects, all human resource (HR) managers, including the company involved in this project, report as a fact that very few, if any, of their engineering applicants are women. In contrast to what the HR managers have said, female engineers reported several cases where the best qualified women have applied yet did not get a contract.

‘Women do apply, they certainly do. They apply here but they are never given a chance. What does the HR manager say to that?’

‘It is not the case that women do not apply here, that is simply not true.’

‘I know of cases, two in particular (...) well, it really is not easy [for women].’

‘Before I was finally employed, I think I have sent in (...) I don’t know how many applications.’

Male engineers from middle management in their critical remarks put an emphasis on the mismatching of the actually needed job profile and the excessive expectations formulated in the job advertisements.

‘(...) we are looking for a 25 year old NASA employee with 30 years of job experience, and we thus have to exclude a great many people, (...) in costumer service in software engineering – as Mr. XY has put it – that is not an absolutely hardcore engineering field but to succeed you need communication, co-ordination, some understanding of economic connections. And I believe we deter people with our way of describing it.’

‘Well, what we are always looking for are the 25 year olds, with 15 years of work experience in industry and really good grades.’

The over-demanding job advertisements can be reasonably considered to have a greater negative effect on the application rate particularly of

70 *Christine Wächter*

highly qualified female engineers than on that of their male colleagues. One reason for this being that prejudice against women, which men do not have to confront, has set unequal limits to the amount of practical experience a woman can achieve. An apparent vicious circle exists in which the prejudice produces the effect of fewer women engineers with practical experience which can reinforce some individuals' prejudiced views. It seems easy and reasonable to imagine a highly competent female engineer, fresh out of university with impressive grades, simply not wanting to waste her valuable time in applying to companies that communicate – both in print and image – an apparently convincing wish to exclude them.

Activities to increase the number of highly qualified women in engineering are not recognized, neither within nor from outside the company. According to the women engineers from the focus groups, those activities should be pursued in a top down strategy. But the commitment of management is not clear. The company's intention to recruit more women should be stated more visibly, for example with an additional sentence in the job advertisements such as,

'We want to employ more women in engineering and welcome applications from women engineers.'

Scholarships and industry placements for women engineering students were also recommended.

Staying on

Historically grown notions of masculinities, femininities, and technologies influence our assessment of what 'real engineers' do and how they supposedly are (Cockburn & Ormrod 1993; Faulkner 2000; Kimmel 2000; Lie 1996; Mellström 1995; Mellström 2002; Oldenziel 1999; Paulitz 2007; Wajcman 1991). 'Technology, we all too easily assume, is what men do' (Lubar 1998, 18).

(a) Higher expectations

Even though the job descriptions for engineers – on a formal level – may be gender neutral, women engineers are assumed and expected to have more persistence and superior social skills. A quote from a male engineer illustrates:

‘Women have better finishing qualities. They do not lose their motivation when 95 % of the work is accomplished but stick to it till the end.’

The managers in the male focus group expect so called ‘female skills’ from the women engineers, like having social competencies and personality characteristics that lie way beyond those expected from male engineers.

‘I believe that those female skills would get integrated better, communication would improve, diligence would increase.’

The women engineers confirm that those expectations exist in their everyday work life. As so many women in science and engineering have clarified in other studies before (cf. Adelson 1998; Alic 1986, 191; Diegelmann 1991, 4; Schneider & Schmelter 1995, 470; Thum-Kraft 1991, 98; Wächter 2003, 216 ff), they too report of the stamina necessary to persist and that they have to perform better to get similar appreciation to that given to their male colleagues. In some job advertisements, social skills are explicitly demanded, regardless of gender ‘ability to work in a team’ and ‘excellent communicative skills’ are required.

In the company’s everyday life, women engineers have to show especially high communicative skills. This expectancy is based on the prejudice that women per se have higher social skills but are technically less competent than their male colleagues. For a detailed analysis of ambivalent sexism in engineering see Thaler (2006).

In practice, performance expectations show a gender bias and thus contradict the rhetoric that expectations are not gender discriminatory. What is also striking is that those higher expectations are in no way honoured with gratifications such as a higher salary for example. It seems women

72 *Christine Wächter*

are supposed to bring in an additional bonus simply to prove they are worthy of being considered as potential employees in the first place.

The following quote from a male manager is an example of benevolent sexism, based on the assumption that women have 'so much better social skills'.

'I believe that one should maybe rather start with what we call female engineers and say, what do we expect from the job. In our department we have a lot of communication tasks. There are many co-ordination activities to be carried out, that are mainly communicative, where empathy and acceptance, intercultural acceptance, is needed.'

(b) Invisible, inaudible, 'incompetent'

Some male engineers 'tolerate' women as long as they are alone in an otherwise all male grouping. One reason being, as stated by a male engineer,

'(...) they improve the atmosphere (...)

In German (*'sie verbessern die Atmosphäre'*), this sounds a little like a commercial for an air refresher. I call this phenomenon the 'life as a "social lubricant"'.

The quotes from women engineers show their frustration with this situation.

'Not all women are secretaries!'

'Nobody assumes that a woman in the department might have a different position other than being the one in charge of making the coffee and distributing note pads.'

'Immediately they [visiting or calling customers] assume that in the department there are only men. The woman has to be the secretary. Nobody has ever questioned whether that woman might be an engineer or whatever, she automatically was 'the secretary'. And that has happened quite often, I have to say, at least once a fortnight.'

“Ah, Mr. M. is coming with his secretary.” I thought he was joking since he knows I am not the secretary. But he said “secretary”. And he really knew exactly, because we had had other meetings before and he knew that. (...) But a week later or so he came and apologized.’

Other studies, too, have shown that many men have problems accepting equally or higher qualified women on the same or higher hierarchical level (cf. Berg-Peer 1986, 30; Janshen & Rudolph et al. 1987, 230; Wächter 2003, 192 ff). They live in a world of dichotomy of woman OR colleague. ‘Woman’ comprises, e.g. mother, lover, partner, spouse, sister, daughter, etc., whereas ‘colleague’ is the buddy. So when women engineers enter the stage, problems arise. Women engineers are balancing on this thin line between those two, seemingly irreconcilable roles, actually constantly trying to gain recognition, appreciation and acceptance as a “real” woman’ and as a ‘technically competent person’.

The women also give examples of jokes and remarks at their expense that they have learned to ignore.

‘To some extent you take it in good humour but now and again there are incidents that really hurt because it becomes so clear that there is a certain attitude somehow – that is really alarming. Nobody assumes that a woman in the department might have a different position other than being the one in charge of making the coffee and distributing note pads.’

‘One has to say in principle that the manners among men are different. The jokes that get cracked are to some extent different from those among women.’

‘(...) you also need to be aware that words will be said or jokes cracked that are a bit near the knuckle.’

‘(...) it is a rather women hostile environment there [in a particular department] (...) My reputation is a strong / good one in this company and I have worked myself up to a high status but for a female beginner it would really be tough, I would say. The conditions are very rough (...)’

Women engineers come into contact with humour in at least two ways. One is its use as a coping method in dealing with discriminatory practices, a topic well worth a more in depth study on its own. And the other involves jokes being made at the expense of their gender. Often at the workplace whenever women are in a minority status (and this goes not only for engineers) they have to cope with gender related, derogatory and sexist 'jokes' supposedly made in 'good fun' but in fact at the expense of the female gender. It takes a lot of self-denial to always laugh at jokes made at your own expense. This state of denial may serve as a survival technique, in the sense of 'What I don't accept as reality is no problem and will not bother, offend or hurt me.'

Male engineers report when jokes are told in the presence of women:

'The jokes are less dirty.'

Another example of the difficulties that women have to cope with is simply getting heard and listened to during meetings and in general, a phenomenon not exclusive to the field of engineering. As mentioned above, the women engineers in our sample report that they need a higher degree of persistence and more stamina, and that they constantly have to prove to be better than their male colleagues to gain recognition. Furthermore, they find their competencies constantly questioned. Something that they have already experienced during their time at university. They are frozen in a status of 'beginners forever' (Collmer 1997, 161; Diegelmann 1991, 50; Molvaer & Stein 1994, 43; Wächter 2003, 202 f).

'(...) definitely stamina. One must not be sensitive. One has to be able to get along with men (...)'

'(...) one is absolutely accepted once one has made it to a certain level where one really is not as good as but really a little better (...)'

'(...) a female beginner who lacks the necessary professional experience will face problems.'

'It is all about proving (...) Again and again having to prove that I am performing well, I am doing great, I am better, yes, I have a say.'

And possibly at sometime in the future one will have had enough of this Punch and Judy show [*Kasperltheater*] and decide to have children. (...) Because it simply is not that satisfying here for a woman. I say you have to have a special character to assert yourself here. It is not so simple, they don't make it easy for you. That has to be said frankly and honestly.'

As already mentioned, female graduates and engineering students in their final year who answered the online questionnaire emphasize the importance of equal opportunities and being recognized and treated fairly.

'(...) that I can put my technical competencies into action without having to prove them over and over again; that work, performance, competencies are accepted, acknowledged and recognized regardless of the gender of the actor.'

Getting on

Everyday working life is characterized by a strong culture of presenteeism, a phenomenon of being in the office for long (but not necessarily productive) hours. The women engineers see a strong correlation between the recognition of employees and their working hours.

'There still are bosses who judge their employees according to the hours they spend in the company, and I deliberately call that "doing time".'
(in German: *Zeit absitzen*)

There is an unspoken expectation of being available 24 hours, 7 days a week.

'(...) incredibly (...) there are always people in their offices at the weekend, it's unbelievable.'

'A career, a real career is open to those who completely abandon themselves. To those who are ready to have no more private life, no hobbies, nothing but the company from dawn till dusk. Those are the people who will have a career. As soon as someone, men as well, says (...) "I

76 *Christine Wächter*

have kids and I want to see them grow up as well” (...) for those I think their career is automatically cancelled. That is a no go. As soon as somebody confesses to a family the dedication [to the job] is no longer boundless.’

This is an unreasonable expectation in any case but especially for persons with child or other care responsibilities (such as looking after elderly parents, people with special needs, etc.), which again affects women to a larger degree because the pervasive ancient culture of sexism that exists throughout our society as a whole assumes these responsibilities to be those primarily of women.

Whether with children (of your own) or without children, this kind of work ethic does not foster a sustainable ‘use of human resources’ nor does it support the physical, mental and emotional wellbeing of the employees. Rather it leads sooner or later to burnout or quitting the job altogether.

Women also face glass ceilings, glass walls, get stuck on the ‘sticky floor’. Top management is out of reach for them. And there is also a glass elevator, as the head of the works council told us. It is available to those who are

‘(...) young and dynamic, show management self-confidence, think in a project oriented manner, use bar charts and flow charts, wear suit and tie, are 25 years old and male. Recently, graduates from universities of applied sciences show high self-confidence. Command of the German [as compared to Austrian] language also helps.’

Heading towards diversity and worklife-lifecycle balance²

In all three focus groups diversity in the workforce was seen as a chance for the company to also better reflect the diversity within its group of customers and clients, for example the different nationalities and ethnicities, age groups, disciplines, and genders. It is conceivable from this that the

company would also profit as far as its professional image is concerned, possibly resulting in increased motivation and job satisfaction for the employees. Men and women agreed that the company should become more active in increasing the number of women engineers. This certainly would be an important step on the way to plurality, thus gaining new insights and perspectives, as one male engineering put it:

‘We as human beings simply are different. And it would be an ideal addition if problems get looked at from both mind sets (...) maybe sometimes approaches would be less dense as a result [*das Brett vor’m Kopf würde wegkommen*].’

Two thirds of the women who filled in the online questionnaire replied they could bring ‘a different approach than their male colleagues’ into engineering. Two thirds also said they ‘want to make technologies more human friendly’ and 82.8 % want to ‘make technologies more environmentally sound’.

In all three focus groups the employer’s need to catch up with ensuring work-life balance and compatibility of career and family life was pointed out. The male managers criticize the irreconcilability of job and family. They admit that flex-time work schemes are practised, however, they are not applied throughout the company.

‘Customers are more likely to accept it than your co-workers. Customers don’t have a problem with it. If you tell them that your family is important – that’s okay. This inflexibility here to change full-time jobs into part-time jobs was really nerve-racking.’

‘We also have some men who do teleworking once a week. Three come to my mind right away, they work at home twice a week, simply because their way to work is quite long.’

As already mentioned, the women engineers state a strong connection between recognition and time spent in the office. They criticize deficits in the company’s policy, especially a lack of family friendliness.

78 *Christine Wächter*

‘It is simply like this (...) nobody here works less than 40 hours and sometimes it is 50, 60. It is immense, and currently that is one of the problems in the company. It is nothing special for women but that’s how it is and of course for a woman who has a child that is a problem. But it is also a problem for a man.’

The male engineers from middle management call for action to introduce flex-time and part-time work models on a broader scale. And a re-assessment of parental leave should lead to acknowledging the increase in social competence that comes along with family management.

For the female staff, activities to support balancing work life and family responsibilities were called for, child care facilities being a core issue. From top management the women demand the inclusion of an equal opportunity policy and gender mainstreaming in the company’s charta and to put it into action.

‘Top management has to say, “Okay, now we will do this and that.” Consequently, it is the HR department that has to put it into action.’

Results from the online questionnaire confirm the demand for equal opportunities, work-life balance and reconciliation of work life and family life. The last two issues in particular are of special importance to potential applicants. ‘To also have a private life’ was ranked as the most important criterion when choosing an employer. 64 % of the respondents, at the same time, believe that in the company involved in the project, ‘one has to be available day and night’. 91.3 % doubt that fathers and mothers in this company can do teleworking to combine job and child care, only 8.7 % believe that is possible in this company. However, the criterion ‘to be able to work flex-time after maternity leave’ is important for the women questioned when picking their future employer.

The HR department pointed out that family friendly flex-time models are available and negotiated on an individual basis. Due to a lack of communicating these options of flex-time and teleworking, e.g. on the website, the company loses out on presenting itself as an attractive employer (not only) to women engineers. ‘To be able to have a career’

was another very important criterion when looking for an attractive employer. Further important criteria were 'get further training in technical fields', 'get further training in other fields', 'be able to work flex-time', and 'take over responsibility for my own field of activity.'

An obvious discrepancy becomes apparent between women's requirements and the company's practice, as it is presented on the website and in the employees magazine. Women are not recognized. The language used is only partly gender sensitive and in photographs one mostly finds only men.

Several good practice companies, like Daimler Chrysler, Ford, VW and others, have shown that diversity pays. Positive effects can be shown with internal co-operation and work culture as well as externally in communication with customers, clients and potential future employees.

Recommendations

The company has practised several gender mainstreaming activities, such as flex-time, re-entry policy, participation in 'girls-into-engineering' programmes, etc. However, these require reinforcement and more intensive promotion.

To successfully profit from a higher number of women engineers, the company ought to build and improve upon the existing framework by applying a more informed, vigorous and pro-active approach to gender mainstreaming, not only by reinforcing existing practices but also by identifying and implementing other good practice examples that exist within the automotive industry. Furthermore, it should foster more overtly and substantially career advancement for women, work-life balance for both women and men, and a higher degree of diversity.

To increase the number of women in the 'getting in' phase, activities to be carried out in co-operation with schools and universities were recommended, such as participating in the 'Girls' day' (<http://www.mafalda.at/toechtertag07/index.php> [29.3.2007] and the FIT Programme (a taster programme for girls in their final high school year, <http://www.fit.tugraz.at/>), awarding scholarships to female engineering students, offering industry placements, and introducing a programme to prepare female engineering students for senior positions.

In the stages of ‘staying on’ and ‘getting on’, recommendations for activities within the company include continuing with existing and starting new activities like installing an equal opportunity officer and gender mainstreaming and diversity programmes, bringing flex-time work models and teleworking on a broader level and communicating it in the company’s relevant recruiting measures. The company should also set up measures to support fathers, increase co-operation with child care facilities, ensure further training during parental leave to make re-entry easier, help setting up networks and mentoring for women engineers and female junior employees.

Role models – women designers in the automotive industry

Out of respect for the anonymity of the participants in our research project, these specific regional role models cannot be presented here. In the interest of providing at least some information concerning the many women who are designing cars worldwide, a superficially small number of female role models are listed here in alphabetical order.

– **Anne Asensio**

One of the two female directors of design work for General Motors (GM). She was named ‘Automotive Woman of the Year’ in 1997 by ‘Automotive News’. Until 2002, when she joined General Motors, she was part of the Renault Design team, involved in designing the cars ‘Megane Scenic’, ‘Clio’ and ‘Twingo’. At GM she is Executive Director of Design, Interior Design, Quality and Brand Character.
(www.dmi.org/dmi/html/publications/journal/fullabstract_d.jsp?itemID=03141BOU10 [20.2.2004])

– **Joanne Cole**

One of the 100 leading women in the North American automotive industry as was recognized by ‘Automotive News’ in September 2000. Director of Engineering, Soft Trim Systems Comfort and Advanced Development Company at Johnson Controls Inc., in Plymouth, Mich-

igan, where she won acclaim for designing an integrated seat belt for the Chrysler 'Sebring'. Later, at Ford Motor Co., she was chief designer for SUV interiors.

(www.autonews.com/page.cms?pageId=98 {22.3.2004};
www.theautochannel.com/news/press/date/20000911/press025252.html
{20.8.2007})

– **Helen Emsley**

One of the two female directors of design work for GM, where she is global director of design, colour and trim. Before that she was designer for Opel.

(www.autonews.com/page.cms?pageId=98 {20.2.2004})

– **Laura Farina**

Chief designer for Alfa Romeo, where she is responsible for the design of the sporty GTA product line.

(www.autobild.de/drucken_alles.php?artikel_id=2886 {20.2.2004})

– **Rita Forst**

Project engineer for new engine designs at Opel in 1981, where she was also responsible for the introduction of the catalytic converter and four-valve technology. Currently, she is Executive Director, Product Engineering at GM Powertrain Europe. Named 'Woman of the Year' in 2006 by 'Automotive News Europe'.

(www.gmeurope.com/news/2006/news_060123.html {20.8.2007};
www.media.gm.com/intl/opel/en/news/pr_old/pressrelease_174.htm
{20.8.2007})

– **Ayline Koning**

Won the Pilkington Design Award by the Royal College of Art in London in 2003. Works in the design team of Land Rover in Gaydon, UK.

(www.carpages.co.uk/land_rover/land_rover_designer_wins_top_award_06_09_03.asp {20.2.2004})

– **Camilla Palmertz**

Head of the women-only design team (Maria Widell Christiansen, Eva-Lisa Andersson, Elna Holmberg, Maria Ugglä, Cynthia Charwick, Anna Rosén, Lena Ekelund and Tatiana Butovitsch Temm) of Volvo's 'Your

Concept Car' (YCC) which was successfully presented at the Geneva Motor Show in 2004. She has worked on the inflatable curtain safety system and has gained international recognition for developing the first pregnant crash-test dummy.

(www.auto.howstuffworks.com/volvo-concept1.htm [9.3.2007];
www.volvocars.at/_Tier3/AboutUs/NewsEvents/default.htm [18.2.2004];
www.volvoclub.org.uk/press/releases/ycc_674.htm [22.3.2004])

– **Anja Rentrop**

Member of the 'Women's Engineering Panel' at Ford. As a designer she was responsible for the launch of the successor to the Mazda 323. She is also co-ordinator of the 'Try Ing' programme, directed at raising young women's interest in engineering and technology.

(www.remember.unicum.de/evo/index.php?id=13&languageid=1
[20.2.2004];
www.autosieger.de/article6763.html [20.8.2007])

– **Cristina Siletto**

Named 'Woman of the Year' by 'Automotive News Europe' in 2002. She is heading the small-car platform at Fiat Auto where she has been responsible, for example, for the Fiat 'Punto' (2005).

(www.italiaspeed.com/news_2002_01_139siletto.html [18.2.2004])

– **Kaja Weber**

Product engineer for the German full-service vehicle supplier Karmann where she designs prototypes like the Mercedes 'CLK Cabrio' or the 'Crossfire' for Chrysler.

(www.zeit.de/2003/37/C-Ingenieurinnen [18.2.2004])

Conclusion

The masculine image of the company in particular and the automotive industry in general seems to be a major deterrent for women. This perception correlates strongly with a gendered culture of actual engineering work which turns everyday lives of women engineers into an ongoing hurdle race with unfair, unequal opportunities and conditions. The current practices of the automotive industry, especially the mass production

of automobiles, can certainly be criticized with regards to its negative global environmental effects. Even though a more gender-balanced workforce does not automatically lead to more sustainable technologies, it can be realistically assumed that a greater degree of diversity and democracy on the micro level will support similar effects on the macro level. Within this frame, the research project 'Engineer Your Future – Women Shaping Technology' aimed at instigating activities that may contribute to a more gender-balanced, inclusive and diverse engineering work force in the Province of Styria and beyond.

Notes

- ¹ Judith Glover (2000) uses the terms 'Getting in', 'Staying on' and 'Getting on' to describe crucial phases in career paths of women in science and engineering.
- ² The currently used term work-life balance implies that working is not living and that life takes place outside the job. The term 'worklife-lifelif balance' admittedly hurts the eyes but it is first and foremost, a work-in-progress attempt to eliminate this discrepancy. In the following, however, the customary term work-life balance will be applied as it was used in the field work for the project.

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84 Christine Wächter

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