z-optimations

**Improving automation
through motion technology**

z-optimations, Tiroler Strasse 3, 87629 Füssen, Germany

Tiroler Strasse 3
87629 Füssen
Germany
Telephone: +49 8362 9392-0
Fax: +49 8362 9392-400
E-mail: info@z-opti.com
Internet: http://www.z-opti.com
VAT ID No.: DE 151185287
Tax No.: 012 149 60796

Testimonial

for

Mr. Max Kubierschky
Dorfstrasse 5a
14806 Lübnitz
[Germany]

Mr. Max Kubierschky (date of birth: 08 January 1967) was employed as a mathematician and software engineer with us from 08 March 2010 to 29 March 2012. He had previously worked for our company from February 2008 as a freelancer.

The services z-optimations provides are aimed at reducing the mechanical non-productive time of machines controlled by CNC and PLC.

Mr. Kubierschky developed and implemented complex mathematical algorithms in the field of motion optimisation.
His duties included the following:

- developing modules with which to calculate the optimum speed profile for a given path; the modules also served to find the best possible path, and to avoid any obstacles along this path. In developing the modules, Mr. Kubierschky needed to take various kinematic constraints into consideration, e.g. limits on speed, acceleration and jerk function.
- developing modules with which to calculate spline fits for the approximation of predetermined movements by means of polynomials in several dimensions. These modules were also used to calculate suitable supporting points for the spline fits, taking into account a given maximum deviation.

- contributing work towards our in-house optimisation tool in the following areas: parsing a customer's CNC code for the Siemens 840D control system; simulating the resulting movements; an interactive, three-dimensional graphical representation of the movements.
- analysing the potential for optimisation of flank processing by examining the customer's CNC code and the measured data of machine movements.
- developing a logging tool to record machine events in a compressed manner and make them accessible. The most important aspects of this work were great resilience against external disruption, and fast data access.

[Bank account:] Postbank, bank code: 700 100 80, account number: 0123 926 806
Account holder: Michael Zwerger

Development was carried out under Delphi and in CNC code.

The tasks were characterised by code development that placed high demands on reliability and general validity. Mr. Kubierschky created suitable unit tests, defined the interfaces clearly and also prepared excellent documentation.

Mr. Kubierschky always fulfilled the tasks he was assigned to our complete satisfaction. The software developed by him is of remarkably high quality. Mr. Kubierschky was also invariably able to come to grips with difficult problems in a quick and independent manner. Since he possesses broad, and especially profound, expert knowledge and came up with many creative ideas, his results were always well above the average. His work made a significant contribution towards the success of our company.

Due to his amicable personality and his helpful attitude towards colleagues, Mr. Kubierschky was well regarded and held in very high esteem by both superiors and colleagues. He worked from home via a home office. Collaborating in a team situation via telephone and digital channels worked very well.

Due to the adverse economic situation, we were unfortunately forced to severely cut back our research and development activities. To our regret, this meant we were forced to do without the position held by Mr. Kubierschky.

We greatly regret losing Mr. Kubierschky, and would would like to thank him for the successful work he carried out and for his cooperative conduct at all times. We wish Mr. Kubierschky all the best for his future professional and personal life, and success in whatever he does.

Füssen, 08 March 2012

z-optimations

[signature]

(Signature/s)

Die Übersetzung wurde von einem deutschsprachigen Original gefertigt.
Die Übersetzung besteht aus drei Seiten.
Hiermit beglaubige ich die Richtigkeit und Vollständigkeit der Übersetzung.

Bad Belzig, 17. September 2013

This translation was done from a German-language original.
This translation consists of three pages.
I herewith certify that the translation is accurate and complete.

Bad Belzig, 17 September 2013

[1]

---

1 *Seal:* Edward Viesel – document translator generally authorised by the President of the District Court of Potsdam to translate documents from and into the English language.