

Computer Based System for Feeding Force Evaluation in Sewing Readymade Garment	العنوان:
Mohamed, Nora Al Mtwawly Abo Alftoh	المؤلف الرئيسي:
Mostafa, Ahmed Samy, Hassan, Mounir Mourad, عادل، الحديدي، محمد (Super).	مؤلفين آخرين:
2008	التاريخ الميلادي:
المنصورة	موقع:
1 - 153	الصفحات:
537925	رقم MD:
رسائل جامعية	نوع المحتوى:
English	اللغة:
رسالة ماجستير	الدرجة العلمية:
جامعة المنصورة	الجامعة:
كلية الهندسة	الكلية:
مصر	الدولة:
Dissertations	قواعد المعلومات:
هندسة الغزل و النسيج، حياكة الملابس، تكنولوجيا المعلومات	مواضيع:
<a href="https://search.mandumah.com/Record/537925">https://search.mandumah.com/Record/537925</a>	رابط:

## المخلص

في هذا البحث تم قياس قوة التغذية على ماكينات الحياكة وتقدير انتظاميتها والتي تعتبر مؤشرا على انتظامية طول الغرزة وذلك باستخدام منظومتي حاسب آلي مختلفتين تحت الظروف الفعلية لعملية الحياكة . المنظومة الاولى تعتمد على طريقة غير مباشرة وهي قياس الطاقة الكهربائية المستهلكة في القوة اللازمة للتغذية. المنظومة الثانية والتي تم انشائها في هذا البحث تعتمد على طريقة مباشرة في قياس قوة التغذية عن طريق دائرة الكترونية لقياس الانفعال ( strain meter ). وتم دراسة كلا من متغيرات الماكينة المتمثلة في السرعة وحمل قدم الضغط وكثافة الغرز ونوع الدواسة على قوة التغذية وانتظاميتها من غرزة الى اخرى كما تم دراسة تأثير متغيرات الحياكة المتمثلة في عدد طبقات القماش واتجاه خط الحياكة. ايضا تم دراسة تأثير هذه المتغيرات على مسافة الانزلاق بين طبقات القماش و تم الربط بين انتظامية قوة التغذية وانتظامية طول الغرزة عند زيادة عدد الطبقات اثناء الحياكة وتحت تأثير المتغيرات المختلفة . تصلح هذه المنظومة للاستخدام كوسيلة معملية لتحديد الظروف المثلى لحياكة الاقمشة المختلفة بغرض تحسين الجودة.

## **Abstract**

In this series of articles, the sewing feeding force and its regularity which is an indicator to stitch size regularity were measured using two different computer-based measuring systems under the real conditions of sewing process. The first system is an indirect method based on measuring the electric power consumption due to fabric feeding. The second system was established to measure the feeding force directly using a gauge piece and a strain meter. The effect of sewing machine parameters in terms of speed, presser foot pressure and stitch size on the feeding force and its regularity from stitch to another were studied. The effect of sewing parameters in terms of number of fabric layers and sewing line direction were also studied. The effect of sewing machine parameters on the shear distance between fabric layers and the relation between feeding force regularity and stitch length regularity were investigated. The established computer based measuring system could be used as a testing instrument to identify the different ideal sewing parameters for different kinds of fabrics in order to control the sewing quality.

---

---

Computer Based System for Feeding Force Evaluation in Sewing Readymade Garment	العنوان:
Mohamed, Nora Al Mtwwaly Abo Alftoh	المؤلف الرئيسي:
Mostafa, Ahmed Samy, Hassan, Mounir Mourad, عادل، الحديدي، محمد (Super).	مؤلفين آخرين:
2008	التاريخ الميلادي:
المنصورة	موقع:
1 - 153	الصفحات:
537925	رقم MD:
رسائل جامعية	نوع المحتوى:
English	اللغة:
رسالة ماجستير	الدرجة العلمية:
جامعة المنصورة	الجامعة:
كلية الهندسة	الكلية:
مصر	الدولة:
Dissertations	قواعد المعلومات:
هندسة الغزل و النسيج، حياكة الملابس، تكنولوجيا المعلومات	مواضيع:
<a href="https://search.mandumah.com/Record/537925">https://search.mandumah.com/Record/537925</a>	رابط:

## CONTENTS

---

<b>Contents</b>	<b>Page</b>
<b>Acknowledgements</b>	I
<b>Abstract</b>	ii
<b>List of figures</b>	ix
<b>List of tables</b>	xvii
<b>List of symbols</b>	xix
<b>Chapter (1) INTRODUCTION AND REVIEW OF PREVIOUS WORK</b>	1
1-1 Introduction	1
1-2 Review of previous work	4
<b>Chapter (2) FEEDING FORCE MEASURING SYSTEM BASED ON INDIRECT METHOD</b>	23
2-1 Measuring of feeding force based on electric power requirements measuring system)	24
2-2 Sewing Machine and Servo Motor Specifications	26
2-3 Optical system to specify the sewing machine cycle :	27
2-3-1 The photo sensor,	28
2-3-2 The amplifier circuit, and	28

## CONTENTS

---

Contents	Page
2-3-3 Reflection Object	29
2-4 Converting the electrical output to a digital signal	30
2-5 Estimation of feeding force	33
2-6 Sensitivity of the measuring system	35
2-7 Analysis of output feeding signal	37
2-8 Experimental work for the indirect measuring system	40
2-8-1 Experimental plans for effect of sewing machine parameters using the indirect measuring system force	41
2-8-1-1 sewing machine speed,	41
2-8-1-2 seam size, and	42
2-8-1-3 presser foot pressure.	42
2-8-2 Experimental plans for effect of sewing parameters using the indirect measuring system	44
2-8-2-1 Effect of number of fabric layers and fabric directions	44
2-8-2-2 sewing line angle for face and back of fabric.	44
2-8-3 Experimental plan for effect of fabric parameters	45
2-8-3-1 Fabric weft density	45
2-9 Results and Discussion for the Indirect Measuring System:	46

## CONTENTS

---

Contents	Page
2-9-1 Effect of sewing machine parameters on the feeding force	46
2-9-1-1 Effect of sewing machine speed, and	46
2-9-1-2 Effect of seam size.	51
2-9-1-3 Effect of presser foot pressure.	55
2-9-2 Effect of sewing parameters measuring system	59
2-9-2-1 Number of fabric layers and fabric directions	59
2-9-2-2 Effect of sewing line angle for face and back of fabric	66
2-9-3 Effect of fabric parameters	73
2-9-3-1 Effect of fabric weft density	73
<b>Chapter (3) MEASURING OF FEEDING FORCE</b>	78
<b>BASED ON DIRECT METHOD</b>	
3-1 Sewing machine specifications ,	80
3-2 Gauge piece (sensing element),	80
3-3 Strain meter,	82
3-4 Procedures of recording signals ,	83
3-5 Estimation of feeding force using the direct measuring system,	84
3-6 Sensitivity of the direct measuring system ,and	85

## CONTENTS

---

Contents	Page
3-7 Calibration of gauge piece	89
3- 8 Experimental work for the direct measuring system	92
3-8-1 Experimental plan for effect of machine parameters using the direct measuring system sewing on the relation between feeding force and stitch size regularity	92
3-8-2 Experimental plan for effect of presser foot width using the direct measuring system on the relation between feeding force and stitch size regularity	94
3- 8 -3 Experimental plan for effect of presser foot material using the direct measuring system	95
3-8-4 Experimental plan for effect of feed dog position using the direct measuring system	96
3-8-5 Experimental plan for effect of sewing parameters using the direct measuring system:	97
3-8-5 -1 Sewing direction, and	97
3-8-5-2 Number of fabric layer	98
3-8-6 Experimental plan for effect of machine parameters on fabric slippage between two layers	99
3-8-7 Experimental plan for relationship between feeding force and stitch size regularity	100
3-9 Results and Discussion for the direct measuring system	102
3-9-1 Effect of machine parameters using the direct measuring system	102



## CONTENTS

---

Contents	Page
3-9-2 Effect of presser foot width using the direct measuring system	108
3-9-3 Effect of presser foot material using the direct measuring system	114
3-9-4 Effect of feed dog position using the direct measuring system	120
3-9-5 Effect of sewing parameters using the direct measuring system	124
3-9-5-1 Effect of sewing direction	124
3-9-5-2 Effect of number of fabric layers	126
3-9-6 Effect of machine parameters on fabric slippage between two layers using the direct measuring system	128
3-10 Relationship between feeding force and stitch size regularity	130
3-10-1 Effect of increasing no. of Layers during sewing	130
3-10-2 Effect of increasing machine speed during sewing on the relation between feeding force and stitch size regularity	134

# CONTENTS

---

<b>Contents</b>	<b>Page</b>
3-10-3 Effect of increasing presser foot load during sewing on the relation between feeding force and stitch size regularity	138
3-10-4 Effect of increasing stitch size during sewing on the relation between feeding force and stitch size regularity	142
<b>CONCLUSION</b>	147
<b>RECOMMENDATIONS</b>	149
<b>REFRECNCES</b>	150
<b>Appendices</b>	153

Computer Based System for Feeding Force Evaluation in Sewing Readymade Garment	العنوان:
Mohamed, Nora Al Mtwaly Abo Alftoh	المؤلف الرئيسي:
Mostafa, Ahmed Samy, Hassan, Mounir Mourad, عادل، الحديدي، محمد (Super).	مؤلفين آخرين:
2008	التاريخ الميلادي:
المنصورة	موقع:
1 - 153	الصفحات:
537925	رقم MD:
رسائل جامعية	نوع المحتوى:
English	اللغة:
رسالة ماجستير	الدرجة العلمية:
جامعة المنصورة	الجامعة:
كلية الهندسة	الكلية:
مصر	الدولة:
Dissertations	قواعد المعلومات:
هندسة الغزل و النسيج، حياكة الملابس، تكنولوجيا المعلومات	مواضيع:
<a href="https://search.mandumah.com/Record/537925">https://search.mandumah.com/Record/537925</a>	رابط:





Mansoura University  
Faculty of Engineering  
Department of Textile Engineering

# **Computer Based System for Feeding Force Evaluation in Sewing Readymade Garment**

**By**

**Eng. Nora Elmtwaly Abo Elftoh Mohamed**

B.SC. Textile Eng., Mansoura University, 2001

A Thesis Submitted in Partial Fulfillment of the Requirements for the Masters  
of Science Degree in Textile Engineering

## **UNDER SUPERVISION**

**Prof. Dr. Adel Mohamed Elhadidy**

*Department of Textile Engineering  
Faculty of Engineering, Mansoura University  
Mansoura, Egypt*

**A. Prof. Dr. Ahmed Samy Mostafa**

*Department of Textile Engineering  
Faculty of Engineering, Mansoura University  
Mansoura, Egypt*

**Dr. Mounir Mourad Hassan**

*Department of Textile Engineering  
Faculty of Engineering, Mansoura University  
Mansoura, Egypt*

**2008**





Mansoura University  
Faculty of Engineering  
Department of Textile Engineering

# **Computer Based System for Feeding Force Evaluation in Sewing Readymade Garment**

**By**

**Eng. Nora Elmtwaly Abo Elftoh Mohamed**

B.SC. Textile Eng., Mansoura University, 2001

A Thesis Submitted in Partial Fulfillment of the Requirements for the Masters  
of Science Degree in Textile Engineering

## **UNDER SUPERVISION**

**Prof. Dr. Adel Mohamed Elhadidy      A. Prof. Dr. Ahmed Samy Mostafa**

*Department of Textile Engineering  
Faculty of Engineering, Mansoura University  
Mansoura, Egypt*

*Department of Textile Engineering  
Faculty of Engineering, Mansoura University  
Mansoura, Egypt*

**Dr. Mounir Mourad Hassan**

*Department of Textile Engineering  
Faculty of Engineering, Mansoura University  
Mansoura, Egypt*

**2008**









## **SUPERVISORS**

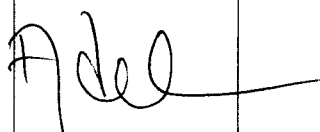

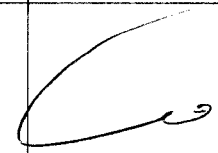
Thesis Title

### **Computer based system for feeding force evaluation in sewing ready made garments**

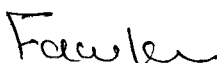
Researcher Name

**Nora Elmtwaly Abo Elftoh Mohamed foda**

Supervisors

No	Name	Position	Signature
1	Prof. Dr. \ Adel Mohamed Elhadidy	<i>Prof. of Textile Engineering Department of Textile Engineering Faculty of Engineering Mansoura University</i>	
2	A.Prof. Dr. \ Ahmed Samy Mostafa	<i>A.Prof. of Textile Engineering. Department of Textile Engineering Faculty of Engineering Mansoura University</i>	
3	Dr. \ Mounir Mourad Hassan	<i>Lecturer. of textile Engineering. Department of Textile Engineering Faculty of Engineering Mansoura University</i>	

Head of Text Dept.





Head of Text Dept. – Dean



Dean



## Acknowledgement

---

I am honored to acknowledge the favors of my advisor **Prof. Dr. Adel Mohamed Elhadidy** for all his advice and support during the course of this study, and I pray to Almighty Allah to give him happiness in this life and in the hereafter. Special and deep thanks to my advisor **Assoc. Prof. Dr. Ahmed Samy Mostafa** for his help, guidance and great patience during the course of this study. Special thanks to my supervisor, **Dr. Mounir Mourad Hassan** for his help, support and beneficial discussions.

I also want to express thanks deep and sincere to all members and staff of textile engineering department for helping and supplying me with their deep experience.

Finally, no words can adequately express my deep gratitude and great appreciation to my parents and my friends assist me in this work.



## JUDGES


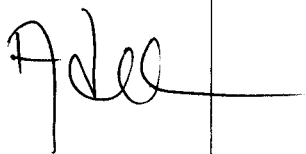

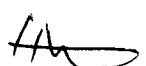
Thesis Title

### **Computer based system for feeding force evaluation in sewing ready made garments**

Researcher Name

**Nora Elmtwaly Abo Elftoh Mohamed foda**

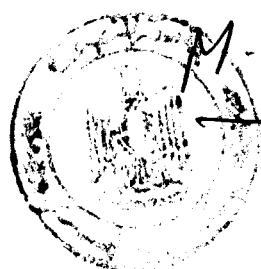
Judges

No	Name	Position	Signature
1	Prof.Dr. Ibrahim Abdo Elhawary	<i>Prof. of Textile Engineering Department of Textile Engineering Faculty of Engineering Alexandria University</i>	
2	Prof. Dr. \ Adel Mohamed Elhadidy	<i>Prof. of Textile Engineering Department of Textile Engineering Faculty of Engineering Mansoura University</i>	
3	A.Prof. Dr. \ Ahmed Samy Mostafa	<i>A .Prof. of Textile Engineering Department of Textile Engineering Faculty of Engineering Mansoura University</i>	
4	A.Prof. Dr. \ Hatem Mohamed fathy Idress	<i>A .Prof. of apparel Engineering Department of apparel Engineering Faculty of Applied Arts Mansoura University</i>	

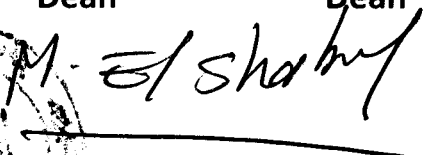
Head of Text Dept.



Vice – Dean



Dean





## **Abstract**

In this series of articles, the sewing feeding force and its regularity which is an indicator to stitch size regularity were measured using two different computer-based measuring systems under the real conditions of sewing process. The first system is an indirect method based on measuring the electric power consumption due to fabric feeding. The second system was established to measure the feeding force directly using a gauge piece and a strain meter. The effect of sewing machine parameters in terms of speed, presser foot pressure and stitch size on the feeding force and its regularity from stitch to another were studied. The effect of sewing parameters in terms of number of fabric layers and sewing line direction were also studied. The effect of sewing machine parameters on the shear distance between fabric layers and the relation between feeding force regularity and stitch length regularity were investigated. The established computer based measuring system could be used as a testing instrument to identify the different ideal sewing parameters for different kinds of fabrics in order to control the sewing quality.

---

---





## CONTENTS

---

<b>Contents</b>	<b>Page</b>
<b>Acknowledgements</b>	I
<b>Abstract</b>	ii
<b>List of figures</b>	ix
<b>List of tables</b>	xvii
<b>List of symbols</b>	xix
<b>Chapter (1) INTRODUCTION AND REVIEW OF PREVIOUS WORK</b>	1
1-1 Introduction	1
1-2 Review of previous work	4
<b>Chapter (2) FEEDING FORCE MEASURING SYSTEM BASED ON INDIRECT METHOD</b>	23
2-1 Measuring of feeding force based on electric power requirements measuring system)	24
2-2 Sewing Machine and Servo Motor Specifications	26
2-3 Optical system to specify the sewing machine cycle :	27
2-3-1 The photo sensor,	28
2-3-2 The amplifier circuit, and	28

## CONTENTS

---

Contents	Page
2-3-3 Reflection Object	29
2-4 Converting the electrical output to a digital signal	30
2-5 Estimation of feeding force	33
2-6 Sensitivity of the measuring system	35
2-7 Analysis of output feeding signal	37
2-8 Experimental work for the indirect measuring system	40
2-8-1 Experimental plans for effect of sewing machine parameters using the indirect measuring system force	41
2-8-1-1 sewing machine speed,	41
2-8-1-2 seam size, and	42
2-8-1-3 presser foot pressure.	42
2-8-2 Experimental plans for effect of sewing parameters using the indirect measuring system	44
2-8-2-1 Effect of number of fabric layers and fabric directions	44
2-8-2-2 sewing line angle for face and back of fabric.	44
2-8-3 Experimental plan for effect of fabric parameters	45
2-8-3-1 Fabric weft density	45
2-9 Results and Discussion for the Indirect Measuring System:	46

## CONTENTS

---

Contents	Page
2-9-1 Effect of sewing machine parameters on the feeding force	46
2-9-1-1 Effect of sewing machine speed, and	46
2-9-1-2 Effect of seam size.	51
2-9-1-3 Effect of presser foot pressure.	55
2-9-2 Effect of sewing parameters measuring system	59
2-9-2-1 Number of fabric layers and fabric directions	59
2-9-2-2 Effect of sewing line angle for face and back of fabric	66
2-9-3 Effect of fabric parameters	73
2-9-3-1 Effect of fabric weft density	73
<b>Chapter (3) MEASURING OF FEEDING FORCE</b>	<b>78</b>
<b>BASED ON DIRECT METHOD</b>	
3-1 Sewing machine specifications ,	80
3-2 Gauge piece (sensing element),	80
3-3 Strain meter,	82
3-4 Procedures of recording signals ,	83
3-5 Estimation of feeding force using the direct measuring system,	84
3-6 Sensitivity of the direct measuring system ,and	85

## CONTENTS

---

Contents	Page
3-7 Calibration of gauge piece	89
3- 8 Experimental work for the direct measuring system	92
3-8-1 Experimental plan for effect of machine parameters using the direct measuring system sewing on the relation between feeding force and stitch size regularity	92
3-8-2 Experimental plan for effect of presser foot width using the direct measuring system on the relation between feeding force and stitch size regularity	94
3- 8 -3 Experimental plan for effect of presser foot material using the direct measuring system	95
3-8-4 Experimental plan for effect of feed dog position using the direct measuring system	96
3-8-5 Experimental plan for effect of sewing parameters using the direct measuring system:	97
3-8-5 -1 Sewing direction, and	97
3-8-5-2 Number of fabric layer	98
3-8-6 Experimental plan for effect of machine parameters on fabric slippage between two layers	99
3-8-7 Experimental plan for relationship between feeding force and stitch size regularity	100
3-9 Results and Discussion for the direct measuring system	102
3-9-1 Effect of machine parameters using the direct measuring system	102

## CONTENTS

---

Contents	Page
3-9-2 Effect of presser foot width using the direct measuring system	108
3-9-3 Effect of presser foot material using the direct measuring system	114
3-9-4 Effect of feed dog position using the direct measuring system	120
3-9-5 Effect of sewing parameters using the direct measuring system	124
3-9-5-1 Effect of sewing direction	124
3-9-5-2 Effect of number of fabric layers	126
3-9-6 Effect of machine parameters on fabric slippage between two layers using the direct measuring system	128
3-10 Relationship between feeding force and stitch size regularity	130
3-10-1 Effect of increasing no. of Layers during sewing	130
3-10-2 Effect of increasing machine speed during sewing on the relation between feeding force and stitch size regularity	134

# CONTENTS

---

<b>Contents</b>	<b>Page</b>
3-10-3 Effect of increasing presser foot load during sewing on the relation between feeding force and stitch size regularity	138
3-10-4 Effect of increasing stitch size during sewing on the relation between feeding force and stitch size regularity	142
<b>CONCLUSION</b>	147
<b>RECOMMENDATIONS</b>	149
<b>REFRECNCES</b>	150
<b>Appendices</b>	153

# List of Figures

Figure	Title	Page
1.1	Drop feed system	22
2.1	Flow chart of the indirect measuring system	25
2.2	Timing diagram of the sewing machine	26
2.3	A diagrammatical sketch of the optical sensing system	27
2.4	The amplifier circuit	29
2.5	The output signal from the optical system	30
2.6	Two channel digital storage oscilloscope (DSO)	31
2.7	Windows screen of the DSO program	31
2.8	The saved image of the signal	32
2.9	The two recorded signals without feeding and with feeding a fabric sample	35
2.10	Sensitivity of measuring at two different stitch sizes	36
2.11	Sensitivity of measuring at two different load	37
2.12	Flow chart for program steps	38
2.13	The output of the MATLAB program	39
2.14	Pressure calibration curve	43
2.15	Results of feeding signal analysis for effect of machine speed at 108 s.p.m	47
2.16	Results of feeding signal analysis for effect of machine speed	48

## List of Figures

---

<b>Figure</b>	<b>Title</b>	<b>Page</b>
2.17	Recorded feeding signal for effect of machine speed at 274,439 and 596 s.p.m	49
2.18	Effect of machine speed on feeding force and its regularity	50
2.19	Results of feeding signal analysis for effect of seam size 2 s.p.cm	52
2.20	Results of feeding signal analysis for effect of seam size 5.5 s.p.cm	53
2.21	Effect of seam size on feeding force and its regularity	54
2.22	Results of feeding signal analysis for effect of pressure of presser foot at (90 gmf)	56
2.23	Results of feeding signal analysis for effect of pressure of presser foot at (4000 gmf)	57
2.24	Effect of pressure of presser foot on feeding force and its regularity	58
2.25	Results of feeding signals analysis at one layer in warp direction	60
2.26	Results of feeding signals analysis at five layers in warp direction	61
2.27	Results of feeding signals analysis at five layers in warp direction	62
2.28	Results of feeding signals analysis at five layers in weft direction	63
2.29	Effect of number of layer on feeding for warp and weft directions	64



## List of Figures

---

<b>Figure</b>	<b>Title</b>	<b>Page</b>
2.30	Effect of number of layer on C.V% of feeding for warp and weft directions	65
2.31	Results of feeding signal analyzing for effect of sewing angle on back of fabric at zero degree	67
2.32	Results of feeding signal analyzing for effect of sewing angle on back of fabric at 90 degree	68
2.33	Results of feeding signal analyzing for effect of sewing angle on face of fabric at zero degree	69
2.34	Results of feeding signal analyzing for effect of sewing angle on face of fabric at 90 degree	70
2.35	Effect of sewing angle on feeding force for back and face of fabric	71
2.36	Effect of sewing angle for back of fabric and face of fabric on the CV% of feeding force	72
2.37	Results of feeding signal analysis for effect of fabric weft density at 8.8 p.p.cm	74
2.38	Results of feeding signal analysis for effect of fabric weft density at 17.6 p.p.cm	75
2.39	Effect of fabric weft density on feeding force and its regularity	76

## List of Figures

---

<b>Figure</b>	<b>Title</b>	<b>Page</b>
3.1	A block diagram for the direct measuring system	79
3.2	The gauge piece	81
3.3	Strain gauge	81
3.4	The stresses on the gauge piece due to fabric feeding	82
3.5	The circuit of strain meter	83
3.6	The output signals of the direct measuring system	85
3.7	Sensitivity of the direct measuring system for different presser foot pressures	86
3.8	Sensitivity of the direct measuring system for different stitches length different levels of machine speed	87
3.9	Sensitivity of the direct measuring system for different machine speed	88
3.10	Calibration curve of gauge piece	90
3.11	The out put of the MATLAB program	91
3.12	Effect of speed at different seam size and medium pressure using the direct measuring system	102
3.13	Effect of speed at different seam size and high and low pressure using the direct measuring system	103
3.14	Effect of speed at different seam size at very high and very low pressure using the direct measuring system	104

## List of Figures

---

<b>Figure</b>	<b>Title</b>	<b>Page</b>
3.15	Effect of presser foot pressure at different speed and medium stitch size (3.5 s.p.m) using the direct measuring system	105
3.16	Effect of presser foot pressure on C.V % of feeding force at different seam size using the direct measuring system	106
3.17	Effect of presser foot pressure on the c.v % of feeding force at different speed using the direct measuring system	107
3.18	Effect of presser foot width at 256 s.p.m using the direct measuring system	108
3.19	Effect of presser foot width at 573 s.p.m using the direct measuring system	109
3.20	Effect of presser foot width at 877 s.p.m using the direct measuring system	110
3.21	Effect of presser foot width on the C.V % of Feeding Force at 256 s.p.m using the direct measuring system	111
3.22	Effect of presser foot width on the C.V % of Feeding Force at 573 s.p.m using the direct measuring system	112
3.23	Effect of presser foot width on the C.V % of Feeding Force at 877 s.p.m using the direct measuring system	113
3.24	Effect of presser foot material at 256 s.p.m using the direct measuring system	114

Computer Based System for Feeding Force Evaluation in Sewing Readymade Garment	العنوان:
Mohamed, Nora Al Mtwaly Abo Alftoh	المؤلف الرئيسي:
Mostafa, Ahmed Samy, Hassan, Mounir Mourad, عادل، الحديدي، محمد (Super).	مؤلفين آخرين:
2008	التاريخ الميلادي:
المنصورة	موقع:
1 - 153	الصفحات:
537925	رقم MD:
رسائل جامعية	نوع المحتوى:
English	اللغة:
رسالة ماجستير	الدرجة العلمية:
جامعة المنصورة	الجامعة:
كلية الهندسة	الكلية:
مصر	الدولة:
Dissertations	قواعد المعلومات:
هندسة الغزل و النسيج، حياكة الملابس، تكنولوجيا المعلومات	مواضيع:
<a href="https://search.mandumah.com/Record/537925">https://search.mandumah.com/Record/537925</a>	رابط:





جامعة المنصورة  
كلية الهندسة  
قسم هندسة الغزل والنسيج

# منظومة حاسب آلي لتقييم قوة التغذية في حياكة الملابس الجاهزة

رسالة علمية مقدمة من

المهندسة / نورا المتولى أبو الفتوح محمد فوده

بكالوريوس هندسة الغزل والنسيج 2001- جامعة المنصورة

كجزء من المتطلبات للحصول على درجة الماجستير فى هندسة الغزل والنسيج

تحت إشراف

أ.م.د / أحمد سامى مصطفى

قسم هندسة الغزل والنسيج  
كلية الهندسة - جامعة المنصورة  
جمهورية مصر العربية

أ.د / عادل محمد الحديدي

قسم هندسة الغزل والنسيج  
كلية الهندسة - جامعة المنصورة  
جمهورية مصر العربية

د / منير مراد حسن

قسم هندسة الغزل والنسيج  
كلية الهندسة - جامعة المنصورة  
جمهورية مصر العربية

2008





Mansoura University  
Faculty of Engineering  
Department of Textile Engineering

# **Computer Based System for Feeding Force Evaluation in Sewing Readymade Garment**

**By**

**Eng. Nora Elmtwaly Abo Elftoh Mohamed**

B.SC. Textile Eng., Mansoura University, 2001

A Thesis Submitted in Partial Fulfillment of the Requirements for the Masters  
of Science Degree in Textile Engineering

## **UNDER SUPERVISION**

**Prof. Dr. Adel Mohamed Elhadidy**

*Department of Textile Engineering  
Faculty of Engineering, Mansoura University  
Mansoura, Egypt*

**A. Prof. Dr. Ahmed Samy Mostafa**

*Department of Textile Engineering  
Faculty of Engineering, Mansoura University  
Mansoura, Egypt*

**Dr. Mounir Mourad Hassan**

*Department of Textile Engineering  
Faculty of Engineering, Mansoura University  
Mansoura, Egypt*

**2008**