Optical Tooling with a Laptop Data Collector



F.M.Gaudreault, M.L.Gaydosh, M.W.Perry, M.J.Rogers.
Stanford Linear Accelerator Center, Stanford, CA 94309, USA.

Abstract:

It has long been understood that the transposition of data from printouts to data collection sheets, and the subsequent manipulation of this data with measurement values, is an obvious error source in optical tooling projects. Ideas for computerized data collection have been under consideration for some time, yet they lacked the versatility needed for even the most typical optical tooling jobs. Surveyors experienced with optical tooling were used to designing the measurement strategy that worked best for each job. There was no canned formula that worked with every case. After extensive field testing a program was developed that worked in as many cases as possible. The program contains ideal files for components and monumentation, format sheets for set-up and measurement of components, and a summary sheet of work accomplished so far. This allows for the step by step movement through the measurement process.



By hand, one person full time could almost keep up with measurements.



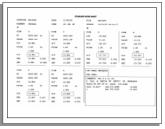
Using the computer, instant results are available to the crew.



Now, where was that data sheet?



Hand written work sheet.



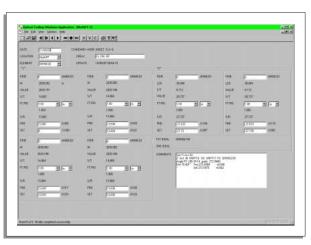
Worksheet printout from computer.



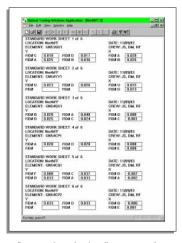
Setup sheet, worksheet, summary sheet, and all data files.

	Dec 194	-	-				
				ed kty	C m T	35	- 2
lw X	FUZZI			etties	umati -	man ma	2
diam'r.	STATE OF	-0		toda.	E. In. 15		
PALE	1250	-0			12521	_	_
	Constitution	الإس			equipment i	ma (Elizabeth	
-	FILL	-	400	TRACTO	DV.	men.	
TORUS.	227	1	-8	PERSONAL PROPERTY.	Dist.	HE W	
11404	-	21:	æ	-	400	21:2	
100	100			4.0	9100		
DATE OF	FUTTE	-		THE PERSON NAMED IN	Farm	-	
No.	PUTTE	田村		THE	parts.	31	
THE R	20% JH			this:	23.84		
	SNA.				ARM.		
- DESCRIPTION OF	-		0	editor is			
			4				
MINE TRANS	De la constitución de la constit		. 3	Nº ME	-	-	
					No.		
THE REAL PROPERTY.				DATE .		-1	
MATERIAL STATES		40		1915			
	Section 1	.BS		189			
Mark				54			
MINT HALE		115		2	-		
TMT	STATE OF	.#II			-	-	
MALE				1.0			
14100	2			NAME:	-		
laborer.	F	-11-	2				
lumm.	100	-81	a	- Schen	PRIBAGO		
HOUSE	E1100	31-	3	WESTERS.	B-80111	5)1	
2444	F	-41	a	- DME	0110		
340AH	Time:	30	3	HALE	4000		
Des Miller	D28	-45	ď	181	9.00		
NEATH		31-	3	18	201		
SHOW.	439	1000	d	10	Print.	五戶 五	
second.	10	EII:	7		189		
-	170	1000	d)	18	38779	100	
MARKET.	£110	11-	-	MEMBER	\$14,791		
are -	200		ď				
wine see	MI.						

Set up sheet, with instrument height and line of sight



Work sheet, showing fiducials of one component



Summary sheet, showing all components done from one setup.