



CERN summer student program 2017

Sigas Christos

Supervisor: Favre Gilles

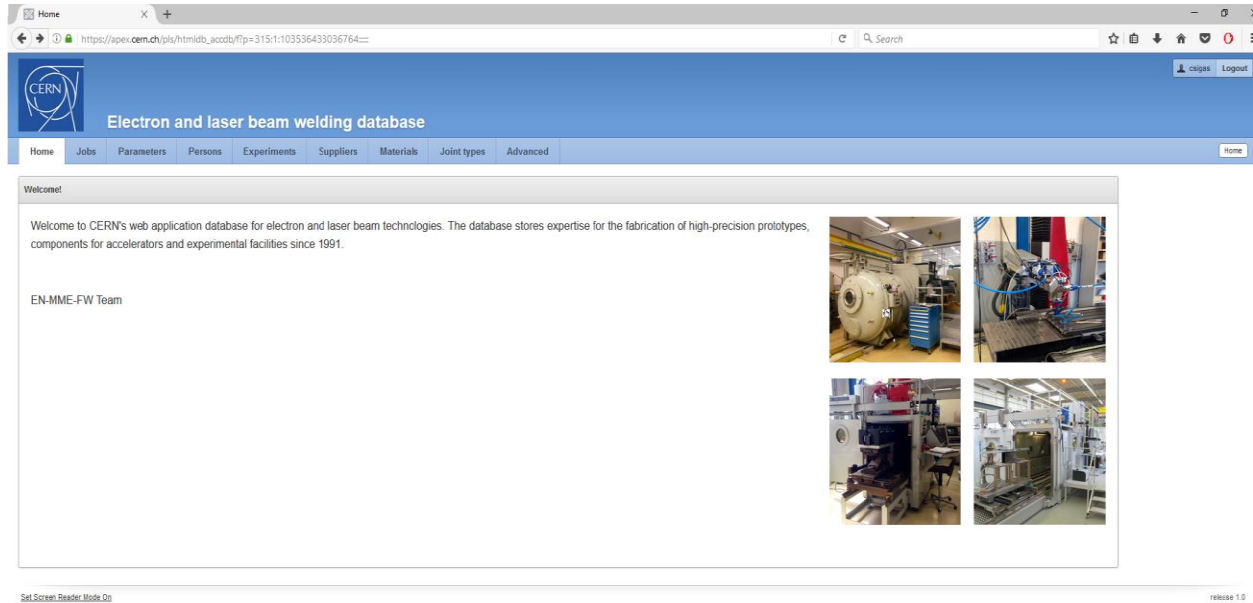
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Abstract

This report describes the modifications at CERN's web application for electron and laser beam technologies. There are updates at both the front and the back end of the application. New electron and laser machines were added and also old machines were updated. There is also a new feature for printing needed information.

FRONT END

To make the web application more user friendly, the images which display the machines at the home page are now hyperlinks. By clicking them the user can navigate to a new webpage with the specific machine's parameters. At this new webpage all the parameters are ordered by creation date.



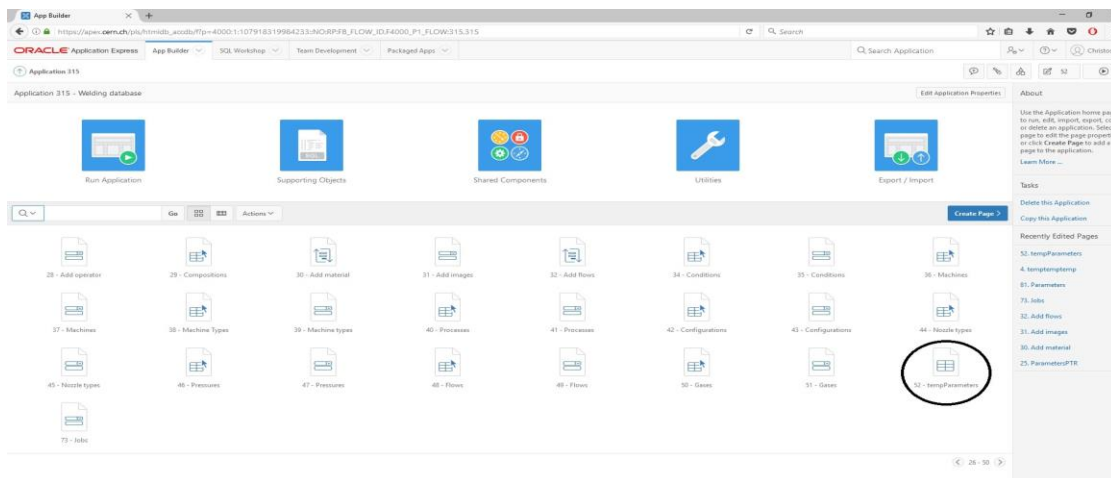
For this to happen there has been an addition of an invisible row at view->params_view with the machineID value.

Machine	Joint Type	Cnc Prog	Penetration	Thickness	Diameter	Comments	Job	Material
PTR	Axial circumferential weld with step	-	9	9	138	General: Soudage de la colerette Céramique (Y17-Y19-Y19-V20) Tacking: 8 Points avec I=12A Welding: Soudage calme, Cordon plat, Upslope5° edge375° Downslope20° Bon comportement général. Joint: Pas de préparation avant soudage.		Cu OFE
PTR	Axial circumferential weld with step	-	9	9	138	General: Reprise Soudage de la colerette sur Céramique Y17 (Fuite localisée après inspection visuelle à la loupe: trou sur projection lourde) Welding: Problème de masse à la réparation, arrêt du faisceau Nettoyage de la suie sur la céramique (coté extérieur) Deux reprises pour balayer large la zone soudée avec une mauvaise masse Joint: Pas de préparation avant soudage.		Cu OFE
PTR	Axial circumferential weld with step	-	1	2	102	General: Soudage de la céramique sur le Lambda. 08-05-2005 Céramiques (V22-V23-V24-V25) Tacking: 4points avec I=15mA plus 4 points avec I=20mA Welding: Upslope5° edge370° Downslope20° Joint: Pas de préparation avant soudage.		Cu OFE
PTR	Axial circumferential weld with step	-	2	2	160	General: Soudage de la céramique + Lambda sur le corps assemblé 09-06-2005 Pièces (V22-V23-V24-V25) Tacking: 4 points avec I=15mA plus 4 points avec I=20mA Welding: Cordon plat, Upslope5° edge375° Downslope10° Joint: Pas de préparation avant soudage.		Cu OFE
PTR	Axial circumferential weld with step	-	9	9	138	General: Soudage de la colerette Céramiques (V22-V23-V24-V25) Tacking: 4 Points avec I=12A Welding: Soudage calme, Cordon plat, Upslope5° edge375° Downslope 10° Bon comportement général. Joint: Pas de préparation avant soudage.		Cu OFE
PTR	Axial circumferential weld with step	-	1	2	102	General: Soudage de la céramique sur le Lambda. 18-07-2005 Céramiques (26-27) Tacking: 4points avec I=15mA plus 4 points avec I=20mA Welding: Upslope5° edge370° Downslope20° Joint: Pas de préparation avant soudage.		Cu OFE
PTR	Axial circumferential weld with step	-	2	2	160	General: Soudage de la céramique + Lambda sur le corps assemblé 19-07-2005 Pièces (26-27) Tacking: 4 points avec I=15mA plus 4 points avec I=20mA Welding: Cordon plat, Upslope5° edge375° Downslope10° Joint: Pas de préparation avant soudage.		Cu OFE
PTR	Axial circumferential weld with step	-	9	9	138	General: Soudage de la colerette 19-07-2005 Céramiques (26-27) Tacking: 4 Points avec I=12A Welding: Soudage calme, Cordon plat, Upslope5° edge375° Downslope 10° Bon comportement général. Joint: Pas de préparation avant soudage.		Cu OFE
PTR	Axial circumferential weld with step	-	1	2	102	General: Soudage de la céramique sur le Lambda. 24-03-2009 Céramiques (33-34) Tacking: 4points avec I=15mA plus 4 points avec I=20mA Welding: Upslope5° edge370° Downslope20° Joint: Pas de préparation avant soudage.		Cu OFE
PTR	Axial circumferential weld with step	-	1	2	102	General: Soudage de la céramique sur le Lambda. 24-03-2009 Céramiques () Tacking: 4points avec I=15mA plus 4 points avec I=20mA Va =12mm/s Welding: Upslope5° sdx370° Downslope20° Joint: Pas de préparation avant soudage.		Cu OFE

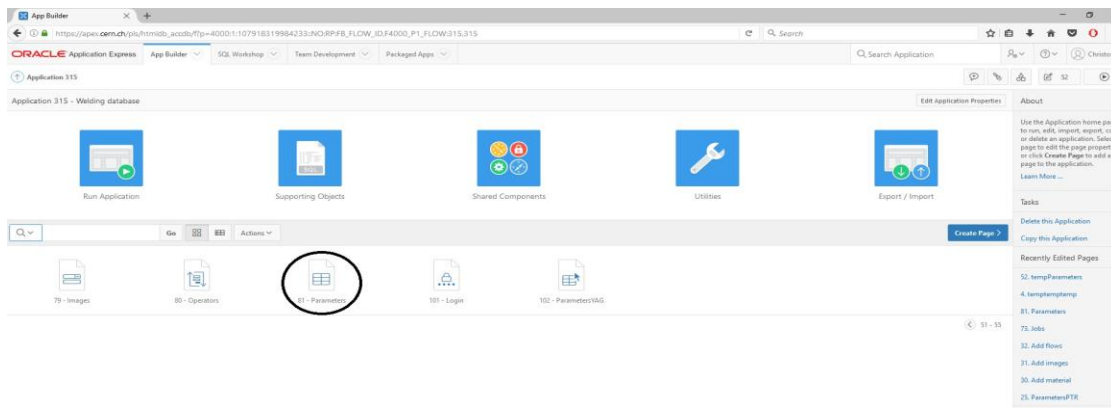
As for the new machines there are new regions with new page items(parameters and dynamic actions) for each one, to submit into the database.

In the new version of the web application, the parameters page [page 81] is replaced by the tempparameters page [page 52]. So every page which was redirecting to page 81 is now redirecting to page 52.(connections fixed)

The old parameters version of the web application is still available without using it.



(Page 52 – tempParameters)



(Page 81-Parameters)

BACK END

Shared Components:

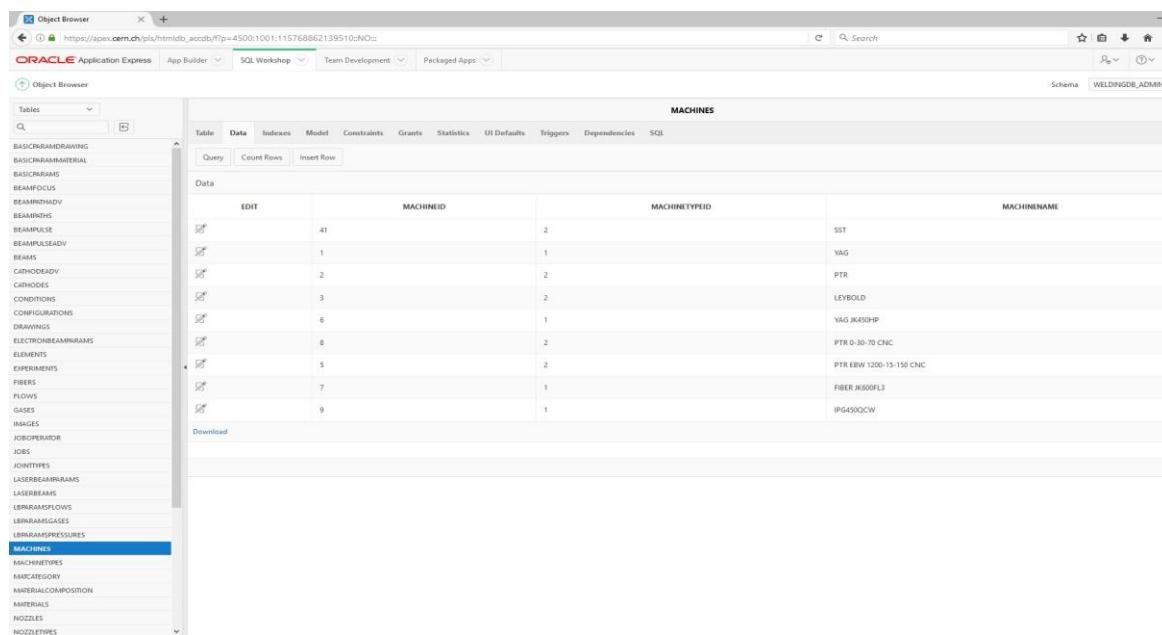
In web application's shared components new lists of values are added. Those lists contain static values which are used for the drop down menus at job's parameters.

Lists created:

- cathodetypes
- diameterfiber
- diameteroutput
- focusdknob
- jk450hpsector
- jk600fl35shape
- mask
- ringvalues
- typeofhead
- machinesnew
- segmentnum
- machines
- functions
- diameterinput

Database updates:

- New columns were created for each new page item (machine parameters).
- Page items are connected to the database columns.



The screenshot shows the Oracle SQL Developer interface. On the left is the 'Object Browser' pane with a tree view of database objects. The 'MACHINES' table is selected. The main window displays the 'MACHINES' table data in a grid. The table has columns: EDIT, MACHINEID, MACHINETYPEID, and MACHINENAME. The data is as follows:

EDIT	MACHINEID	MACHINETYPEID	MACHINENAME
41	2	SSI	
1	1	YAG	
2	2	PTR	
3	2	LEYBOLD	
6	1	YAG R450HP	
8	2	PTR 0-30-70 CNC	
5	2	PTR EBW 1200-15-150 CNC	
7	1	FIBER J680FL3	
9	1	IPG450QCW	

(example of new machines data/db screenshot)

Column Name	Data Type	Nullable	Default	Primary Key
TACKINGADV	NUMBER	No	-	1
ACCVOLTAGE	NUMBER	Yes	-	-
BEAMCURRENT	FLOAT	Yes	-	-
FOCUS1	FLOAT	Yes	-	-
FOCUS2	FLOAT	Yes	-	-
ADVSPD	FLOAT	Yes	-	-
UPSLOPE	FLOAT	Yes	-	-
DOWNSLOPE	FLOAT	Yes	-	-
WORKDISTANCE	FLOAT	Yes	-	-
PULSATION	NUMBER	Yes	-	-
PULSEFREQ	FLOAT	Yes	-	-
PULSEINT	FLOAT	Yes	-	-
FUNCTIONGEN	NUMBER	Yes	-	-
FUNCTIONNUM	NUMBER	Yes	-	-
AMPLITUDEX	FLOAT	Yes	-	-
AMPLITUDEY	FLOAT	Yes	-	-
BEAMON	FLOAT	Yes	-	-
TACKDIST	FLOAT	Yes	-	-
SEGMENT1	FLOAT	Yes	-	-
SEGMENT2	FLOAT	Yes	-	-
SEGMENT3	FLOAT	Yes	-	-
SEGMENT4	FLOAT	Yes	-	-
SEGMENT5	FLOAT	Yes	-	-
SEGMENT6	FLOAT	Yes	-	-
SEGMENT7	FLOAT	Yes	-	-
SEGMENT8	FLOAT	Yes	-	-
BEAMCURRENT1	FLOAT	Yes	-	-

(example of tackingadv updated table showing the new columns which are connected to tack welding parameters /db screenshot)

- SQL and PL/SQL queries are used for connections between front end and back end.
- For submit : CreateParameters (Process Page52)
- For electron beam update : UpdateParametersElectron (Process Page52)
- For laser beam update : UpdateParametersLaser (Process Page52)
- For delete : DeleteParameters (Process Page52)
- Return values to web application from database using SQL queries at SOURCE box in every item

FILE EXPORT:

For file export is used an existing template (DMOS FE.docx) as static item and the APEX plug-in AOP to fill the gaps with database values.

SKILLS DEVELOPED:

- SQL
- PL/SQL
- APEX
- HTML
- DB design

-After my internship I have expanded my knowledge and gained experience on database and web application design

SPECIAL THANKS:

I would like to thank my colleagues Paula Freijedo Menendez, Ian Sexton, Thierry Tardy, Manuel Redondas Monteserin , Thomas Demaziere , Laurent Prever- Loiri, David Chatellain and my supervisor Gilles Favre for their continued and attentive support and useful advice throughout this project and the friendly atmosphere at the office.