Local Challenge Rubric *(detailed)*

Team Name: _____

FLUID POWER CHALLENGE — DÉFI ÉNERGIE DES FLUIDES

	Part A: PORTFOLIO				
Success criteria	***5***	***4***	***3***	***2***	***1-0***
Co-operation of team members in production of portfolio & planned production of their device	All team members participated in a material way and were familiar with portfolio contents and all offered answers to questions	All team members participated in a material way and were familiar with portfolio contents, however only one or two offered answers to questions	Most team members participated but one or two were not very familiar with portfolio contents	Portfolio was done mostly by one student who answered questions with some answers from others	Portfolio was done completely by one student; other team members not at all familiar with portfolio contents (1) or NO portfolio at all (0)
At least two sketches and an isometric drawing of a small portion of a device properly dimensioned	Two detailed sketches and an isometric drawing properly dimensioned and of high quality	Two detailed sketches and an isometric drawing of fair quality with some correct dimensioning	Two sketches and an isometric drawing of fair quality with some correct dimensioning	Two sketches of fair quality and a poor isometric drawing	One or two low-quality sketches and no isometric drawing (1) or none (0)
An orthographic drawing showing dimensions and construction notes	The orthographic drawing shows front, side and plan views and is set out so the scaled dimensions relate to the views	Three orthographic drawings are presented showing front, side and plans views using a consistent scale	Three orthographic drawings are presented showing front, side and plans views using an inconsistent scale	Only two of three orthographic drawings are available	Only one of three orthographic drawings are available(1) or none (0)
A list of materials including consideration of alternatives not in the kit	A comprehensive list of materials is provided, including dimensions and alternative materials are discussed that are “outside the box”	A comprehensive list of materials is provided, including dimensions and alternative materials are discussed that are much the same as provided	An incomplete list of materials is provided without dimensions and alternative materials are discussed that are much the same as provided	An incomplete list of materials is provided without dimensions and no alternative materials are discussed	No list of materials or alternatives are provided (0)
Description of the use of the principles of structural strength and stability	Uses 5 terms from the following sets: force or load or compression or tension; symmetry or triangulation; center of gravity or balance and counterbalance; support beams or struts; gusset or joining methods; aesthetics	Uses 4 terms from the following sets: force or load or compression or tension; symmetry or triangulation; center of gravity or balance and counterbalance; support beams or struts; gusset or joining methods; aesthetics	Uses 3 terms from the following sets: force or load or compression or tension; symmetry or triangulation; center of gravity or balance and counterbalance; support beams or struts; gusset or joining methods; aesthetics	Uses 2 terms from the following sets: force or load or compression or tension; symmetry or triangulation; center of gravity or balance and counterbalance; support beams or struts; gusset or joining methods; aesthetics	Uses 1 term from the following sets: force or load or compression or tension; symmetry or triangulation; center of gravity or balance and counterbalance; support beams or struts; gusset or joining methods; aesthetics
Explanation of the placement of fluid systems	Uses 5 terms from the following sets: pneumatic and hydraulic; system or input and output; density or particle theory; pressure or Pascal’s principle; lever or pivot; friction; work done or mechanical advantage	Uses 4 terms from the following sets: pneumatic and hydraulic; system or input and output; density or particle theory; pressure or Pascal’s principle; lever or pivot; friction; work done or mechanical advantage	Uses 3 terms from the following sets: pneumatic and hydraulic; system or input and output; density or particle theory; pressure or Pascal’s principle; lever or pivot; friction; work done or mechanical advantage	Uses 2 terms from the following sets: pneumatic and hydraulic; system or input and output; density or particle theory; pressure or Pascal’s principle; lever or pivot; friction; work done or mechanical advantage	Uses 1 term from the following sets: pneumatic and hydraulic; system or input and output; density or particle theory; pressure or Pascal’s principle; lever or pivot; friction; work done or mechanical advantage

Success criteria	*5*	*4*	*3*	*2*	*1-0*
Evaluation of a prototype including conclusions from making it	A good description of two prototypes and thorough documentation of lessons learned including reasons for choosing one of the prototypes	A good description of a prototype and documentation of lessons learned with conclusions	A fair description of a prototype and poor documentation of lessons learned	A poor description of prototype and no documentation of conclusions	No mention of prototype or conclusions (0)
	Part B: WORK HABITS				
Success criteria	*5*	*4*	*3*	*2*	*1-0*
Members of the group work independently and co-operatively	All team members work co-operatively sharing the workload in a planned way by working in pairs and individually	All team members work co-operatively sharing the workload by working in pairs and individually without an organized plan	3 team members work co-operatively sharing the workload by working in pairs and individually. One team member participates minimally	2 team members work co-operatively sharing most of the workload. The remaining members participates minimally	1 team member does most of the work on their own with the remaining members participating minimally (1)
Safe working practices	Team members wear safety glasses while cutting and drilling using the appropriate tools safely with material held in a secure way	Team members wear safety glasses while cutting and drilling using the appropriate tools safely with material held in an insecure way	Team members wear safety glasses while cutting or drilling using the inappropriate tools with material held in an insecure way	Some team members do not wear safety glasses while cutting or drilling	No team members wears safety glasses while cutting or drilling (0)
	Part C: DEVICE DESIGN, CONSTRUCTION AND OPERATION				
Success criteria	*5*	*4*	*3*	*2*	*1-0*
The system is well constructed	The system has all parts securely built and attached. The materials involved are used efficiently	The system has all parts securely built and attached. However there are redundant materials that perform no useful function	The system has most parts securely built and attached. Breakage occurs when force is applied to the fluid subsystem	The system has all parts securely built and attached however it does not function	The system has few parts securely built and attached and it does not function (1)
A number of actions of the device are controlled by hydraulics	Four intact	Three intact	Two intact	One intact	None (0)
A number of students operate the device without "breakage"	Four (one may give directions to the other 3)	Three	Two	One	None (0)

	SUMMATION OF SCORES					
	Portfolio (35)	Work Habits (10)	Device Design, Construction and Operation (15)	Interview Questions (20) *(See below)*	Objects placed in designated time period	Total

Interview Questions:

What alternative designs did you look at before selecting the design you are building today? (0-5)

Why did you select this design to use for the Challenge? (0-5)

What other materials might be useful to have? (0-5)

How did you decide who on your team would be responsible for which parts of the project? (0-5)